IDG.net

E-CONVENIENCE
IT plays a key role at online convenience store Kozmo.com, which promises free delivery within an hour. Page 54

PAYROLL BUSTERS
Which IT jobs really break the payroll bank? Technical recruiters reveal the top five. Page 82

DATA LIFESAVER
Data is becoming your company's most valuable asset. What are you doing to keep it alive? Page 76

COMPUTERWORLD

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RETAIL, FOOD OPEN B-TO-B BAZAARS

Sears, Carrefour plan exchange for retailers

BY CRAIG STEDMAN

Retailers looking to lower their supply-chain costs are starting the same kind of jockeying that went on in the auto industry before the Big Three carmakers agreed to build a common online exchange.

That process burst into the open last week, when two of the world's biggest retailers — Sears, Roebuck and Co. and Paris-based Carrefour SA — said they're team-

TARGET'S Jerry Storch: Is Sears sincere?

Retail, page 16

Cargill, Du Pont in Rooster.com launch

BY DOMINIQUE DECKMYN

The food industry, a highly fragmented market with low margins and little growth, is ideally suited for online marketplaces, analysts said. But the industry's major players had not yet shown their hands. That all changed last week.

Cargill Inc., Du Pont Co. and Cenex Harvest States Cooperatives announced plans to launch an online marketplace called Rooster.com, where farmers will be able to buy supplies and sell produce. Within hours, Microsoft Corp. and Radiant Systems Inc. said they had joined to launch Food-

Food Industry, page 16

AUTO E-MARKET FACES BIG HURDLES

Market rivals, IT vendors must create synergy to realize savings from supplier network

BY CAROL SLIWA

The Big Three automakers say they hope to see $50 billion worth of transactions flowing through their newly announced online marketplace by year's end. But before they hit any marks, they face some sizable technical and organizational hurdles in setting up the

site if their business processes are truly to be improved and any substantial cost savings realized, experts said last week.

General Motors Corp., Ford Motor Co. and DaimlerChrysler AG themselves have estimated that the work could cost $200 million, and that's just the start of the fun.

Getting at least two intensely competitive technology vendors to work together will be one of their first challenges. Ford's Auto-xchange is based on Oracle Corp. software. GM's TradeXchange uses products from Walnut Creek, Calif.-based Commerce One Inc. And Stuttgart, Germany-based DaimlerChrysler, an SAP AG customer, could bring yet another player to the table.

"I don't see how Commerce

Automakers, page 92

CIOs JOIN FIGHT TO KILL UCITA

State-by-state battle is joined in Virginia

BY PATRICK THIBODEAU

John Rudin, CIO at Reynolds Metals Co. in Richmond, Va., is in the vanguard of a high-stakes political battle against a controversial law that's pitting users against software vendors, the Uniform Computer Information Transactions Act.

And it's a fight that could have broad implications for user companies in every state — especially if vendors rush to

use Virginia law as a basis for software licenses.

Virginia's Legislature is on the verge of sending UCITA, which establishes the rights of software buyers and sellers and covers topics such as shrink-wrapped licenses and vendor liability for defects, to the governor for his expected signature. It may be the first state to adopt the measure as part of a move to make the state attractive to high-tech businesses.

But Rudin helped organize many of Virginia's major employers into a lobbying counterattack, winning two important legislative concessions: Implementation of UCITA will

UCITA, page 92

FORD   GM

DRAG RACE

ARCH-RIVALS General Motors and Ford have absolutely hurled themselves into the business of selling cars online, with a dizzying array of alliances, initiatives and one-upmanship. In this IT Face-Off, we compare the e-commerce strategies of GM and Ford in three critical areas: the men in charge, the progress toward a build-to-order business model and channel conflict. One of them is edging ahead in this tight race, but only by a fender.
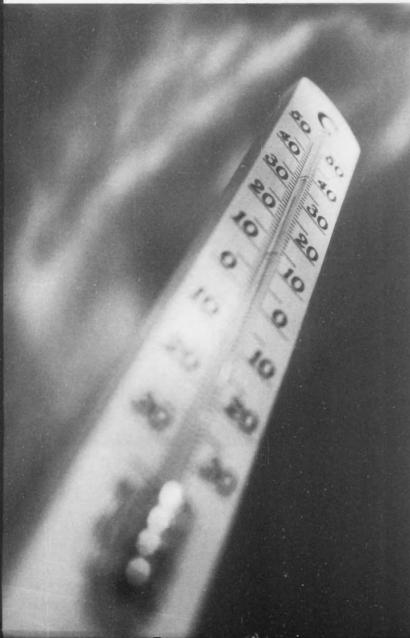
E-COMMERCE

Story begins on page 50.

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VPNs ON THE FLY

Start-up VPNX.com lets incompatible VPNs communicate at will over the Internet. Page 80

AUTOMATING B-TO-B

The dirty little secret of business-to-business exchanges is that they're so low-tech, suppliers have to type in inventory data by hand. But that's changing. Page 42

COMPUTERWORLD THIS WEEK

MARCH 6, 2000

> NOBODY EVER WENT BROKE BANKING ON LAZINESS.

MALCOLM MACLACHLAN, AN E-COMMERCE ANALYST AT INTERNATIONAL DATA CORP., ON THE VIABILITY OF WEB-BASED DELIVERY SERVICE KOZMO.COM. SEE PAGE 54.

Wal-Mart CIO Leaves Retailer an IT Leader

Mott made decision-support key to growth

BY CRAIG STEDMAN

RANDY MOTT last week left his high-profile job as CIO at Wal-Mart Stores Inc. to take a similar job at Dell Computer Corp.

He leaves behind a legacy of furthering Wal-Mart's strategy of using technology to set itself apart from other retailers in the way it deals with both customers and suppliers, industry watchers said.

During Mott's six-year tenure as CIO, Bentonville, Ark.-based Wal-Mart made its decision-support, supply-chain and logistics systems the envy of almost every company trying to compete against the world's largest retailer.

"There's just no question that Wal-Mart has set the standard," said Cathy Hotka, vice president of information technology at the National Retail Federation (NRF) in Washington.

"Wal-Mart, better than anyone, has proven how important the strategic deployment of IT can be to a company," said Hotka.

That pushed other retailers to start looking at IT in the same light in an effort to keep up, Hotka added. She works on IT issues with members of the NRF, an association that includes many of the major U.S. retailers — but not Wal-Mart.

The one area where Wal-Mart has stumbled a bit is in selling to consumers via the Internet, analysts said. Wal-Mart in 1996 was one of the first retailers to set up a Web site, but it has yet to become a major online presence. That contributed to a decision made in January to turn Walmart.com into a separate company based in Silicon Valley. Last week, that unit hired Jeanne Jackson, a former executive at The Gap Inc. as its CEO.

Given its size and market clout, Wal-Mart can afford to "be slow about [the Web] and get it right," said Preston Dodd, an analyst at Jupiter Communications Inc. in New York. "But they still have to make some tough decisions." Dodd added that the biggest problem is channel conflict between stores and the Web site, not technology.

Mott, 43, who is scheduled to start this week at Dell in Round Rock, Texas, wasn't available for comment. He worked at Wal-Mart for 22 years, starting as a mainframe programmer and eventually becoming CIO in 1994.

Since then, Wal-Mart has expanded the size of the data warehouse it uses to analyze sales in its stores to an eye-popping 101 terabytes. Two years worth of detailed sales data that goes down to the level of individual receipts is now stored there, the company said.

Under Mott's leadership, Wal-Mart also turned its automated-ordering system, which required the installation of dedicated hardware at the supplier's end, into an Internet-based system that's now used by more than 7,000 companies. It has also been one of the pioneers in working with suppliers on projects involving collaborative planning and forecasting.

"They came up with the concept of an extranet long before it became popular," according to Rena Granofsky, a consultant at J. C. Williams Group Ltd. in Toronto.

Wal-Mart named Kevin Turner to replace Mott as CIO. Turner, 34, had been assistant CIO for the past two years. ▶

RANDY MOTT helped build systems at Wal-Mart that are the envy of other retailers

A Cap Gemini-Ernst & Young Merger Would Combine Skills

Some say $11B deal means fewer choices

BY JULEKHA DASH

Plans by Paris-based Cap Gemini Group SA to acquire the consulting division of New York-based Big Five accounting firm Ernst & Young LLP last week drew mostly positive support from users, who cited the expertise of the combined firms.

However, one former client said consolidation might lead to less competitive pricing and services.

Last week, Cap Gemini offered up to $11 billion in cash and stock to purchase Ernst & Young Consulting. Cap Gemini shareholders and Ernst & Young partners will vote on the deal by the end of June.

Arun Kant, vice president of corporate technology services at New York-based Prudential Insurance Company of America, an Ernst & Young client, said the consolidation would combine the two companies' consulting strengths in strategy and information technology — skills that are needed for e-commerce, he said.

The two firms would also expand their global presence, and that would benefit clients such as Prudential that seek multinational support, said Kant.

Jim Ross, vice president and controller at Richmond, Va.-based CSX Corp., a client of both Ernst & Young and Cap Gemini, said Ernst & Young's attempt to separate its auditing business from its consulting practice would benefit clients.

"If Ernst & Young is the auditor and it happens to get selected [for a consulting engagement], you still have the extra burden to the [client's] audit committee to convince them that it doesn't impair" the auditor's objectivity, he said.

David Pensak, corporate adviser for computer technology at Du Pont Co. in Wilmington, Del., said he's concerned that continued consolidation in the consulting industry would mean less differentiation in price and services. Pensak's company was once a client of both Cap Gemini and Ernst & Young Consulting.

"Pretty soon, every one of these consulting firms are going to look the same. I see differentiation between them disappearing. I would worry that if I need to get competitive bids on a project, it would be more difficult to do so," he said.

Julie Giera, an analyst at Giga Information Group Inc. in Cambridge, Mass., said Cap Gemini would face a big challenge in retaining Ernst & Young Consulting's 18,000 employees. "If you were a [Big Five firm] and watched one of your competitors sell its business, you would aggressively pursue that 18,000," said Giera.

But Michael Meyer, president and CEO of Cap Gemini America Inc., said the firm would offer equity to Ernst & Young partners and a "significant number" of other senior employees. They would vest over five years, offering an incentive for employees to stay.

But Dudley Brown, managing director of recruiting firm BridgeGate LLC in Irvine, Calif., said he has received phone calls from more than two dozen Ernst & Young employees seeking jobs as a result of the possible acquisition. ▶

Combined Resources

What Cap Gemini and Ernst & Young Consulting offer:

ERNST & YOUNG CONSULTING

1999 revenue: $3.5B; 18,000 employees

Consulting: Business, IT and project services

Clients include: Coca-Cola, Boeing, Eli Lilly & Co.

CAP GEMINI

1999 revenue: 4.3B euros, or $4.16B; 39,600 employees

■ Europe's largest IT consultancy

Clients include: Nokia, Ericsson, Procter & Gamble

FTC Moves to Protect Financial Data Privacy

New rules don't go far enough, some argue

BY MARIA TROMBLY

IN THE WAKE OF recent online privacy problems involving the sharing of customer information with third parties, the Federal Trade Commission (FTC) has asked for public comment on new proposed privacy rules for financial institutions.

The rules spell out the principles under which companies can give out consumers' financial information and specifically state that people must be allowed to insist that their records are kept private.

"What it means is that if companies expect to get good accurate data and not scare off consumers, they need to give consumers a lot of reassurances that they're acting in consumers' best interests," said Christopher Kelley, an analyst at Cambridge, Mass.-based Forrester Research Inc.

And companies might have to give out more incentives to encourage customers to part with their personal financial information, he added. Such incentives might include offering lower interest rates on credit cards.

The rules don't just apply to credit-card issuers, banks and brokerages, however.

Under the proposed rules, the term *financial institution* is extended to mean a variety of companies — not just banks, but also retailers and manufacturers — that engage in financial activities. Those activities include brokering or servicing loans and providing financial data processing and transmission services, the FTC said.

This is worrying some companies across the Web. Search engine Ask Jeeves Inc., for example, included a clause in its February Securities and Exchange Commission (SEC) filing warning investors about possible fallout from the new privacy regulations.

"It's a pretty standard clause for Internet companies," said Heather Staples, an Ask Jeeves spokeswoman.

However, some critics are already saying that the rules don't go far enough. "The proposed regulations, given the underlying statute, aren't bad," said Mark Rotenberg, director of the Electronic Privacy Information Center, a Washington nonprofit advocacy group. "The problem is that the underlying statute simply included insufficient safeguards for privacy."

Rotenberg said he expects more action later this year from Congress and state legislatures to expand the consumer privacy protections outlined in November's Gramm-Leach-Bliley Act.

The FTC will accept public comment until March 31. It can be submitted by e-mail to GLBRule@ftc.gov. ▶

SEC Eyes E-Commerce Books

Two accounting practices scrutinized

BY MARIA TROMBLY

Two common e-commerce accounting practices are under close scrutiny by the Securities and Exchange Commission, and the stricter guidelines that may result could affect companies' revenue totals, profit numbers and even stock market valuations.

The first accounting practice is exemplified by e-commerce pioneer Priceline.com Inc. in Stamford, Conn. It books the total cost of goods sold as revenue, even though it and other travel sites, such as Microsoft Corp.'s Expedia Inc. and Honolulu-based Cheap Tickets Inc., only hold title to the goods — such as plane tickets — for short periods of time.

The second practice is exemplified by companies such as Seattle-based Amazon.com Inc., which counts the costs of its distribution centers as a marketing expense, rather than a sales expense or a general administrative expense.

Spokesman Brian Ek defended the way Priceline books revenue, saying it follows Generally Accepted Accounting Principles. It doesn't matter how long Priceline.com owns a ticket; what matters is that the company buys it and resells it to a customer — just like any other retailer does — and accepts all the risks involved in the transaction, he said.

These risks include the potential for customer defaults or fraudulent purchases, said Ek.

"If you look at the name of the seller on the credit-card statement, it's not the airline company. It's Priceline.com," he said.

This process is different from the way travel agents operate. They make a commission on the tickets that their customers buy directly from the airlines.

But the Financial Accounting Standards Board (FASB) says the money Priceline.com and others make on such sales may be a commission. The FASB, a private-sector organization in Norwalk, Conn., is in charge of setting U.S. financial accounting and reporting standards, which the SEC helps enforce.

The FASB says it may issue rules later this year that will force companies to pass certain tests before booking these amounts as revenue. The tests could include determining whether the companies truly assume credit risks or whether they actually own title to the products for a certain period.

If the FASB takes a hard line, it could force these companies to go back and restate their earnings, which could affect stock prices as investors who value stock based on multiples of gross earnings take a fresh look at these companies, said analyst David Zale at New York's Sands Brothers & Co. ▶

New Rules, Bad News

If distribution center costs move from sales and marketing to cost of sales, online retailers' gross profit margins would drop. For example:

Fourth quarter 1999

AMAZON.COM

Fulfillment costs:	$110M
Gross profit margin:	13%
Estimated profit margin after cost change:	-3%

ETOYS.COM

Fulfillment costs:	$30M
Gross profit margin:	19%
Estimated profit margin after cost change:	-9%

SOURCE: TOM WYMAN, ANALYST, J.P. MORGAN

Central Securities Market Idea Draws Heat

BY MARIA TROMBLY

Brokers clashed with the heads of the nation's biggest stock exchanges in a heated discussion over the future of the U.S. securities marketplace at a government hearing last week at the World Trade Center in New York.

What's at stake is a proposal to create a central limit order book where all U.S. stock buyers and sellers would meet electronically. There are now a number of competing stock exchanges, including the New York Stock Exchange (NYSE) and the Nasdaq Stock Market.

A centralized structure would benefit the major brokers, which already route a high volume of their transactions to so-called electronic communications networks. But such a move could hurt small brokerages and discount firms because they would likely have to raise their fees.

Meanwhile, the NYSE and Nasdaq reportedly have discussed merging to preserve a central role at a time of increasing competition from electronic markets, but a Nas-

daq spokesman said Friday that no negotiations or deals are imminent.

Testifying before five members of the Senate Banking Committee, CEOs from four major U.S. securities firms argued for a more centralized market structure.

The heads of the NYSE, Nasdaq and broker Charles Schwab Corp. argued against what they called a "monolithic" stock exchange structure.

But other brokers, including the heads of Morgan Stanley Dean Witter & Co., Goldman, Sachs & Co. and Credit Suisse First Boston, all argued against what they called the fragmentation of the marketplace.

Dana Stiffler, an analyst at Meridien Research Inc. in Newton, Mass., said that although a central clearinghouse might give investors slightly better prices, it would increase costs for discount brokers such as Schwab, which keep prices low by keeping trades in-house. ▶

MERRILL LYNCH CEO David Komansky testified that "the more customer order flow meets in one central place, the more . . . prices improve"

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BRIEFS

H-1B Visas Going Fast

The U.S. Immigration and Naturalization Service reported that almost half the H-1B visas allotted for fiscal year 2000 have been issued – with tens of thousands of visa petitions still pending. Last week, Rep. Lamar Smith (R-Texas), chairman of the House Immigration Subcommittee, proposed raising the visa cap by 45,000 this year. A Senate bill last month proposed raising the visa cap from 115,000 to 195,000 through 2002.

Online Shoppers Spent $5.3B in Q4

The U.S. Commerce Department reported that online shoppers spent $5.3 billion during the fourth quarter, including the holiday shopping season. The agency said that online retailing made up only 0.64% of all retail sales during the period. "But e-tailing has come of age," said Commerce Secretary William M. Daley.

KPMG Tests First Broadband Center

Last week, KPMG Consulting LLC announced the opening of its first broadband solution center. KPMG said the Denver-based facility will enable service providers to test virtual private networks, Web hosting, streaming video and other services before deploying them in the real world. The McLean, Va.-based consulting firm plans to launch similar facilities throughout the U.S., as well as in London and Asia.

GAO Finds Faults in IRS Systems

The U.S. General Accounting Office said last week that ongoing systems problems at the U.S. Internal Revenue Service may be costing billions annually in lost revenue. The GAO found flaws in the design and operation of automated financial-management systems, as well as in computer security. The IRS has embarked on a systems-modernization program to address the criticisms, approving last year a 15-year contract with a consortium of seven information technology vendors.

Leap Day a Mere Nuisance

Sprint, others report minor glitches Feb. 29

**BY JAMES COPE
AND PATRICK THIBODEAU**

JUST AS MOST organizations cruised past Jan. 1 without the serious computer glitches predicted by doomsayers, they made it through leap day, Feb. 29, with only minor nuisances.

For example, one executive reported checking into the Westin Copley Place Hotel in Boston at 3 a.m. on Feb. 29, but was unable to get an electronic room key until later in the day, thanks to a leap-day problem. The electronic key system was down for several hours, the hotel confirmed.

The original concern was that the leap year's extra day could baffle real-time clocks, operating systems and application logic. Most years ending in "00" aren't leap years, but 2000 is a leap year because it's divisible by 400.

The Westin hotel problem was similar to those reported to the White House and international authorities. Leap day didn't cause major infrastructure failures, but it produced some frustrations, such as a baggage-handling delay at Reagan National Airport in Arlington, Va.

Glitches in the Private Sector

Among private-sector companies, White House Y2k czar John Koskinen said the center received reports of a couple of companies with payroll system problems caused by the leap year. A cataloging company also reported a date-related glitch. The firms weren't identified. "There really haven't been many private-sector problems," Koskinen said.

Sprint Corp. said its system that delivers the recorded message "the number you dialed is not in service" was hit by the leap-day bug. "It didn't recognize Feb. 29 as a valid date, and the system shut down," said spokesman Russ Robinson. Only a few callers experienced a problem, he said.

Dale Vecchio, an analyst at Gartner Group Inc. in Stamford, Conn., said the combination of the century rollover and the leap year gave organizations plenty of incentive to remediate their systems. "I hope this leap day brings closure to the year 2000 problem," Vecchio said.

Alan Arnold, director of Ernst & Young LLP's advanced development center in Costa Mesa, Calif., said, "Either we've done a pretty good job [in remediating mainframe systems], or clients haven't reported problems."

Peter de Jager, the renowned Brampton, Ontario, year 2000 consultant, said he was unaware of any major problems resulting from the leap year.

And while the Y2k project experience may have convinced many information technology people that ongoing documentation and systems maintenance can prevent future problems, de Jager isn't convinced that managers have learned their lessons about date logic and documentation.

"The whole strategy of windowing [a Y2k programming shortcut used by most organizations to avoid expanding date fields] will come back to haunt us. It hasn't been documented properly," he said. ▶

Leap Day Irritants

There were no major leap-year disruptions in systems that manage critical infrastructure, only minor glitches that were quickly corrected.

■ In Morocco, incorrect dates displayed on cellular phones

■ Some doctors in the United Kingdom had trouble scheduling patient appointments

■ A bar code-reading program at the U.S. Department of Housing and Urban Development failed

■ At Reagan National Airport, a Sky Cap computer system glitch resulted in longer check-in lines

Senate: Y2k Fixes Worth the Billions Spent

Projects preclude major problems, modernize systems

BY DEWAYNE LEHMAN

In its final report, a U.S. Senate committee that was established two years ago to monitor the year 2000 problem declared that the bug is essentially dead and that an estimated $100 billion spent on preparations was well worth it.

Although hundreds of Y2k problems have been reported worldwide since the date change to 2000, they have been relatively minor, according to the report, which was issued Feb. 29 and includes an extensive list of incidents in the U.S. and 74 other countries.

The 13-page list reports numerous Y2k incidents in transportation, utilities, government and business systems. Among the U.S. incidents cited were system glitches at seven nuclear power plants that weren't associated with public safety; the rejection of thousands of Medicaid claims because they were dated 1900 and 2099; and the failure of a U.S. Department of Defense satellite-based intelligence system shortly after midnight, when the rollover occurred.

The United States Senate Special Committee on the Year 2000 Technology Problem also concluded that in addition to averting major problems, Y2k preparations provided "enduring" benefits.

"Most significantly, the IT infrastructure and mechanisms for more effectively managing it have been modernized," the report states. "Also, Y2k has caused a heightened level of knowledge among executive-level managers as to the importance and vulnerabilities of information technology."
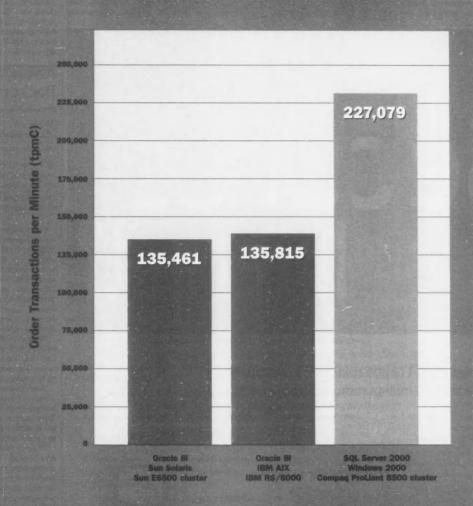
Federal estimates set the cost of year 2000 preparations in the U.S. at $100 billion, with 8.4% of that amount spent by the government. But observers' estimates put the figure much higher — from $150 billion to $225 billion in U.S. government and business expenditures, as estimated by Stamford, Conn.-based Gartner Group Inc., to International Data Corp.'s (IDC) $320 billion worldwide estimate.

Tom Oleson, a research director at IDC in Framingham, Mass., said he agrees with the Senate's report. "On the whole, [the committee] was one of the better sources of information — better than all those yahoos who were predicting the sky was falling."

According to Dale Vecchio, a Y2k analyst at Gartner Group, much of the money spent preparing for the bug can be attributed to "modernization costs," expenditures that are now returning high dividends.

"You're probably getting back $6 or $7 for every dollar you spent," said Capers Jones, a chief scientist at Artemis Management Systems in Boulder, Colo., who analyzes software issues. ▶

Y2k Encyclopedia

"Y2k Aftermath — Crisis Averted," published by the Senate Special Committee on the Year 2000 Technology Problem, contains a 13-page list of Y2k problems, including:

■ Glitches at seven U.S. nuclear power plants

■ Rejection of thousands of Medicaid claims because they were dated 1900 or 2099

■ Failure of a Department of Defense satellite-based intelligence system

■ A security access system in a federal building in Omaha froze in an open position

■ Japanese electronics firms reported 50 different problems in business and plant computers

■ For the complete report and list, go to: *www.senate.gov/~y2k/documents/final.pdf*

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227,079

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Order Transactions per Minute (tpmC)

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100,000
75,000
50,000
25,000
0

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Sun Solaris
Sun E6500 cluster

Oracle 8i
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SQL Server 2000
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IBM's Shark Presses EMC Storage on Price

BY KATHLEEN OHLSON

IBM's Shark is chasing EMC Corp.'s Symmetrix in the deep end of the data-center storage pool and could put Hopkinton, Mass.-based EMC's comfortable profit margins in danger.

Analysts said that Shark, officially called Enterprise Storage System, is becoming a viable alternative to Symmetrix, with aggressive pricing and new features.

"If IBM can take back market share, EMC's margins will be threatened," said John Webster, an analyst at Nashua, N.H.-based Illuminata Inc. "EMC will have to be a little more competitive pricewise."

"EMC is very egregious in their pricing, and customers are starting to lash back," said Carl Greiner, an analyst at Stamford, Conn.-based Meta Group Inc. To keep winning customers, IBM must meet delivery dates for its software, such as a remote-copy function that's due this month, he added.

JUST THE FACTS

Background

Enterprise storage milestones:

EMC Corp.
- Rolled out Symmetrix in 1990
- Shipped and installed 40,000 units

IBM Storage Systems Division
- Released Shark, officially called Enterprise Storage System, last September
- Has shipped 1,600 systems to date, with 1,100 now being installed

---

Tyson Foods Inc. switched from Symmetrix to Shark last month after IBM offered better pricing. The Springdale, Ark.-based food processing company saved $100,000 by trading in Symmetrix and moving to Shark and also increased its storage capacity, said Eric Godfrey, Tyson's manager of database administration.

"We were initially concerned with the newness of the product," but the differences between Symmetrix and Shark are undiscernible, Godfrey said.

Dave Dubnick, a longtime Symmetrix user, said he has no interest in Shark. Symmetrix costs more money, but it has better performance and more advanced features, he said.

"You can make a decision to save money, but you forgo functionality, and it hurts the production environment," said Dubnick, director of information technology at United States Cellular Corp. in Chicago.

However, EMC's current advantages may not last forever.

"EMC does have cause for concern, because IBM is trying to hit them head on," said Mike Adams, an analyst at Cambridge, Mass.-based Giga Information Group Inc.

Shark "is a screamer on paper," he said, but it currently lacks native Fibre Channel and has limited cache — 6GB compared with 16GB in Symmetrix. Once IBM adds features to Shark, users will be the real winners because they will have a choice, Adams said. ▶

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Packages Hit Wireless Market

'Feeding frenzy' brings options to market, but users may still want to build own links

BY MATT HAMBLEN
NEW ORLEANS

BUILDING wireless data links to customers or employers has usually meant piecing together various products from many different vendors as a do-it-yourself project.

But now powerhouse computer vendors have stepped forward to offer packages of hardware, applications and services.

Among the vendors pitching such bundled services at the Wireless 2000 show last week were IBM, Sun Microsystems Inc. and Wireless Knowledge LLC, a joint venture of Microsoft Corp. and Qualcomm Inc. in San Diego.

ERIC SCHULTZ, CEO of Wireless Knowledge, says past 15 months were spent improving products

Big Plans

"In one year, we are going to own the segment for enabling wireless users," said Eric Schultz, CEO of San Diego-based Wireless Knowledge. "We will drive this market."

Schultz took over at Wireless Knowledge in November, one year after the formation of the joint venture — a year that many analysts described as a period of hesitation and floundering at the company.

But according to Schultz, the past 15 months have been devoted to improving products, including the Workstyle Server, which Wireless Knowledge announced Feb. 22. It provides wireless intranet access for large businesses.

Several large customers have signed up for Wireless Knowledge services or products, although none are ready to go public, Schultz said.

Sun last week announced enterprise wireless services with iPlanet E-Commerce Solutions in Mountain View, Calif., and Palm Inc. in Santa Clara, Calif.

In addition, IBM last week announced WebSphere Transcoding Publisher, software that customizes Web content to match the parameters of a receiving device, whether it's a smart phone or handheld device or a browser in a car. That announcement builds on IBM's recent deal with AT&T Corp. to provide software and services over the AT&T wireless network.

Crowded Market

"There really is a feeding frenzy going on in wireless," said analyst Alan Reiter at Wireless Internet and Mobile Computing, a consultancy in Chevy Chase, Md. He was referring to the many companies starting to offer wireless data services in hopes there will be a huge market.

Analysts said it remains to be seen whether large U.S. businesses will opt for services from big vendors or do the work themselves.

Joseph Ferra, a senior vice president at Fidelity Investments in Boston, said his company is open to working with large integrators but until now has had to work solo.

In recent months, Fidelity has added 33,000 customers using wireless two-way pagers to make stock trades. And the firm is experimenting with Palm VII wireless handhelds to give employees access to customer data, Ferra said.

Fidelity had to forge ahead on its own — evaluating products and finding vendors — so it could reach the market quickly, Ferra said. ▶

Lucent to Spin Off Corporate Networking

Equipment user sees change as seamless

BY JAMES COPE

The quest for higher revenue and investor capital seems to be driving a frenzy of restructuring among networking vendors. Lucent Technologies Inc. in Murray Hill, N.J., last week said it will spin off its slow-growing corporate networking business as a separate firm.

The new corporation, whose name and structure have yet to be determined, will take with it Lucent's private branch exchange (PBX), cabling and LAN business segments.

It isn't as radical as Cabletron Systems Inc.'s recent decision to break itself into four pieces or as hyped as the stock offering from 3Com Corp.'s Palm Inc. But analysts said Lucent's move will free its booming business for telecommunications carriers from the business of selling equipment to enterprise customers.

Sharper Focus

"This [spin-off] will benefit Lucent's standing in the carrier market," said Ron Westfall, an analyst at Current Analysis Inc. in Sterling, Va. "The newly created company will likewise be able to sharpen focus on its enterprise products."

Westfall noted that Lucent "had an interesting spin" to the announcement when it said the new company would count 90% of the Fortune 500 among its customers. "That's Lucent's PBX stuff," he said.

Jim Slaby, an analyst at Giga Information Group Inc. in Cambridge, Mass., concurred. Slaby said only 3% or 4% of the $8 billion in annual revenue that Lucent said would go with the new company comes from sales of LAN gear.

Lucent said the businesses being spun off have low single-digit growth, whereas the segments that remain under the Lucent name have high single-digit growth.

Slaby noted that the virtual private networking business, which will remain with the Lu-

Lucent Spin-off

Lucent's new company will focus on enterprise customers.

Spin-off will provide:
- PBX telephone business
- Systimax network cabling
- LAN-based data networking

Lucent provides:
- Optical networking
- Wireless systems
- Virtual private networking
- Network management software

cent parent company, is growing by 50% per year.

"It looks like the heat is on Lucent management," Slaby said. "It's pretty clear: Lucent didn't invest adequately in the enterprise market to compete with Cisco and Nortel. I also think [Lucent] miscalculated that their strength in call centers and PBX would help them sell LAN gear."

But Lucent enterprise customers such as Michael Bender, director of library networking at Pennsylvania State University in University Park, Pa., are pleased with Lucent's corporate networking equipment. "We have a network based on all Lucent products," Bender said. "It's great stuff."

Larry Witherspoon, director of information services for The Seattle Mariners Major League Baseball team, which uses Lucent equipment, said, "We look at this as a seamless change."

Donald Peterson, Lucent's chief financial officer, will be the new company's CEO. ▶

Amazon Actions Spur Protest Over Patent

BY CHRISTINE MCGEEVER

Thousands of independent software developers last week publicly criticized Amazon.com Inc., Amazon.com President Jeffrey Bezos and the U.S. Patent and Trade Office (PTO) for obtaining and granting software patents they said were dangerous.

The developers were responding to an open letter to Bezos from Tim O'Reilly, president of technical book publisher O'Reilly & Associates Inc. in Sebastopol, Calif. The letter said the patent fails to meet tests for novelty and nonobviousness to an expert.

The conflict revolves around Amazon.com's patent last October of a technology it calls 1-Click, which enables customers to purchase items without re-entering shipping and billing information. Shortly after Amazon.com obtained the patent, it filed a suit against rival Barnesandnoble.com Inc. for patent infringement. A judge ordered a preliminary injunction against Barnesandnoble.-com in December.

Experts say the impression left by Amazon.com's actions is that the company used the patent to cripple its competition. The case is now in appeal.

After Bezos "blew off" his letter, O'Reilly posted it Feb. 28 on the O'Reilly.com Web site, inviting visitors to add their opinions. O'Reilly said he estimated 6,000 responses had been posted by March 1.
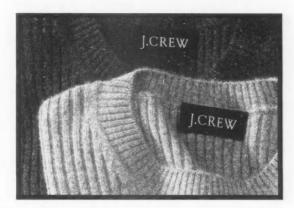
"The PTO doesn't have a good handle on software prior art," said Greg Aharonian, a San Francisco author and publisher of "PatNews," an online newsletter covering software patent issues. According to Aharonian, during the past six years, half the issued software patents cite nothing as prior art and 80% cite nothing from notable sources.

Joe Rolla, the PTO's director of computer and communication technology, wasn't available for comment. Bezos wouldn't comment on the suit.

Barnesandnoble.com counsel Steve Wallach said patent officials have a history of issuing patents based on little research. "It's a widely held opinion that the patent office has been woefully unprepared to address e-commerce," noted Wallach, a partner at Pennie & Edmonds LLP in New York. ▶

BRIEFS

Solaris Less Than NT?

Sun Microsystems Inc.'s Solaris operating system is less expensive to operate than Microsoft Corp.'s Windows NT, according to a report by market research firm Meta Group Inc. in Stamford, Conn. The report found Windows NT implementation costs to be three times those of Solaris and enterprise resource planning costs to be twice those of Solaris in companies with up to $450 million in annual revenue.

S/390 Increases E-Business Ante

IBM last week expanded the e-commerce capabilities of its S/390 mainframes, with incremental upgrades to the hardware as well as its OS/390 operating system Version 2 Release 9. Improvements include support for the latest Java Server Pages and Servlets, better file-and-print server support for Windows applications and a PCI cryptographic coprocessor feature that builds on the security functions already offered by IBM's cryptographic coprocessor.

Cracker Says Staff Are Biggest Back Door

Kevin Mitnick, who was recently released from prison for cracking-related offenses, testified last week before a U.S. Senate committee that is looking into ways to improve government security. He told the committee that he often gained access to systems through "social engineering" or "gagging" – talking employees into giving him access and information.

"Employees are trained to be helpful and to do what they are told in the workplace," said Mitnick.

Legato Unveils GEMS

Legato Systems Inc. in Palo Alto, Calif., has announced GEMS Storage Resource Manager, a tool that issues alerts about trends to help with the management of Windows NT, Unix and Linux enterprise storage resource capacity. The tool automatically monitors physical storage resources, such as disks and RAID systems, and logical storage resources.

Corporate Security Begins at Home

Companies eye personal firewalls for remote users to protect VPNs

BY ANN HARRISON

ONE OF THE fallouts from last month's wave of distributed denial-of-service attacks has been a surge in the use of personal firewalls to secure home PCs accessing corporate networks and to track invaders who seek to use them in attacks.

"We are getting five or 10 requests a day from companies to secure the endpoints of their VPNs," said Gregor Freund, president of Zone Labs Inc. in San Francisco, which has seen more than 500,000 downloads of its free ZoneAlarm personal firewall in the past month, more than at any other time in the company's history.

Freund noted that Trojan horse programs installed on a PC can observe sensitive information before it's encrypted by a virtual private network (VPN). "You can encrypt as much data in transit as you want, but if the PC that information originates from is not secure, then the entire system is not secure," he said.

Greg Gillion, CEO of Network ICE Inc. in San Mateo, Calif., said 90% of the calls for its BlackICE intrusion-detection and firewall product also come from companies seeking to secure telecommuters dialing into VPNs. He said sales of BlackICE are up 50%.

Gillion noted that the average home office could be seized as an intermediate cloaking device through which to transfer commands to an attacking computer. A new malicious program, called Subseven, which is being used by crackers to cover their tracks in this way, is routinely found in BlackICE scans, he said.

Greg Howard, an analyst at The HTRC Group LLC in San Andreas, Calif., said he has had 20 attempted attacks on his home PC since installing his firewall in December. He said recent revelations about the former director of central intelligence, John M. Deutch, improperly handling classified information on his home computer also raised awareness among companies that telecommuters can pose grave security risks.

"Personal firewalls are just another way to protect the integrity of the [corporate] system," said Howard, who noted that some companies are now making them mandatory for telecommuters. "[Intruders] could not only get data but also access the corporate network by sniffing the passwords, algorithms and keys on your personal PC."

Freund warned that some personal firewall programs generate false alarms and prompt users to flood Internet service providers with suspected attack data. "Most users are not sophisticated enough to know that IP addresses can be spoofed and which ISPs to go after," said Freund. ISPs "don't have the bandwidth of analysts to work on them." ❯

ISPs Mobilize Against Attacks

Alliance to develop security guidelines

BY ANN HARRISON

As the FBI continues to search for suspects in the distributed denial-of-service attacks that paralyzed popular e-commerce sites last month and later hit the FBI site itself, Internet service providers are forming alliances to fight back.

Late last month, more than 400 Internet service providers and corporate security managers formed the Alliance for Internet Security to develop a set of security guidelines for combating distributed denial-of-service attacks. The group, which was founded by security vendor ICSA.net in Reston, Va., includes large commercial Internet service providers such as Road Runner in Herndon, Va.; Level 3 Communications Inc. in Broomfield, Colo.; and Sprint Corp. in Westwood, Kan. Members of the alliance subscribe to the pledge that "distributed network attacks are inherently difficult or impossible to defend against by the targeted site."

Laurie Wagner, senior vice president of business development at ICSA.net, said a long-term solution to distributed denial-of-service attacks requires a high level of cooperation among companies and Internet service providers. "We have a long-term problem we have to solve — an authentication problem with the Internet protocol itself," she said. "In the meantime, we are being practical and saying we just can't sit by and wring our hands."

Members of the alliance have agreed to implement filtering technologies and practices to address the distributed denial-of-service threats and prevent networks from being used as attack agents. Steps recommended include reconfiguring routers and firewalls and denying IP-directed broadcasts on perimeter routers.

"All Internet users should assure that their own network is in order and that their ISP is doing the appropriate filtering on behalf of everyone," said Harris Schwartz, director of security at Road Runner.

Gary Grossman, director of security at Exodus Communications Inc. in Santa Clara, Calif., a company that hosts about half the high-traffic e-commerce sites on the Web, said it's also important to improve current informal peer relationships between Internet service providers that exchange information about packet traffic and to warn of impending attacks.

Grossman said that although Exodus is still evaluating the alliance, such groups can encourage closer peering arrangements. "We have very good relations with all of our peering partners, but everyone else doesn't necessarily talk with each other," he said. Grossman added that Exodus has dedicated peering circuits on its network backbone.

Exodus last week launched a new set of security tools and services called the Exodus Security Service Pack v2. Services include internal vulnerability scans, server hardening, incidence response preparation, customized configuration and continuous review of intrusion-detection and firewall equipment. ❯

AT A GLANCE

Advanced Security

Exodus Communications is offering the following packages with Security Service Pack v2 for Web sites hosted by its Internet data centers:

Basic: Security assessment, vulnerability scans, architecture reviews, alert reports and eight hours of incident response assistance per year. Cost: $3,700 per month for 10 hosts; $1,200 for an additional 10

Enhanced: Includes Basic, plus server hardening to plug security holes, assigned account manager, incident response training and 16 hours of incident response assistance per year. Cost: $7,000 per month for 10 hosts; $2,600 for an additional 10

Pro: Site assessment, hardening, customized intrusion-detection system configuration, monthly firewall and 40 hours of incident response assistance per year. Cost starts at $13,000 per month; $2,900 per additional host group

Retail

ing with Oracle Corp. to set up an exchange that will use the Internet to fully automate their combined annual purchases of $80 billion worth of goods.

They also hope to turn the exchange into a dominant online force by luring many other retailers to sign up. The sometype of unified supply-chain exchange that the automakers are planning "is going to happen here, and this is it," said Julian Day, chief operating officer at Sears in Hoffman Estates, Ill. "The dominos will get into line."

But key rivals such as Wal-Mart Stores Inc. in Bentonville, Ark., and Target Corp. in Minneapolis weren't ready to be dominos last week.

Wal-Mart, by far the world's biggest retailer with sales of $165 billion last year, said in a statement that it's still confident its own Internet-based purchasing system "will continue providing us and our large and small suppliers with the tools to be more efficient."

Jerry Storch, president of financial services and new businesses at Target, blasted Sears and Carrefour, saying their announcement "did not suggest they were sincere about trying to build equal partnerships with other retailers."

Target is exploring different proposals for online exchanges and wants to participate in one that involves as many retailers as possible, Storch said. "But I don't believe the way they started this was the right way to go to get to a single exchange," he added.

By announcing the plans before approaching other retailers, Sears and Carrefour appear to be trying to gain a competitive or financial advantage, Storch said. "That's something no one will tolerate," he said.

Sears and Carrefour initially will own equal shares of the new GlobalNetXchange company, with Oracle holding a minority stake. But they said other retailers that sign up will also be able to take equity positions in the exchange.

The new venture, which is due to open for business this month, is the largest retail online exchange proposed so far.

It's by no means the only one,

though: Last week, for example, software vendor i2 Technologies Inc. in Irving, Texas, and VF Corp., an apparel manufacturer in Greensboro, N.C., said they're creating an exchange to connect retailers to companies that make clothing, footwear and other soft-goods items.

Clothing retailer Guess Inc., in Los Angeles announced in December that it's working with two software vendors to develop an apparel-related exchange. And Retek Inc., a software vendor in Minneapolis, last fall launched a supply-chain collaboration exchange the company said is being used by 12 retailers now.

Illustrating the

JULIAN DAY says he believes "the dominos will get in line" with Sears' online market

dynamic nature of the new exchanges, VF said it isn't ruling out participating in the one planned by Sears and Carrefour, which are two of its key customers.

"This is a marketplace that's literally defining itself as we speak," a VF spokeswoman said. "There's a race to at least put a stake in the ground and define your position so you can be part of the discussion [about combining exchanges]."

The different exchanges have similar goals: cutting costs by moving purchasing to the Internet and giving participants better planning and supply-chain management capabilities.

"What we want to do is move our suppliers to the Web as rapidly as possible," said Bruce Johnson, one of Carrefour's top executives. "That's the bottom line."

Like other retailers, Carrefour already uses electronic data interchange (EDI) technology to send purchase orders to its large suppliers. But each EDI connection is unique, and Johnson said many of Carrefour's smaller suppliers can't afford that technology.

However, a venture such as GlobalNetXchange has to attract a lot of additional participants to be taken seriously as a neutral exchange, said Greg Girard, an analyst at AMR Research Inc. in Boston.

"I don't think they need Wal-Mart to make it work, but they need more than Carrefour and Sears, for sure," Girard said. ▶

Service Suite Joins Web Cache Crowd

BY JAIKUMAR VIJAYAN

Boston-based Internet start-up Adero Inc. last week announced a suite of services that it claims will help companies speed up the delivery and distribution of their Web content and services.

The company's GlobalWise service suite uses a combination of intelligent routing software, network monitoring technology and a proprietary form of network caching to move frequently accessed Web content closer to a user's physical location, speeding delivery.

Adero's services will also let Internet companies distribute and deliver streaming media the same way as static and dynamic Web content, said Alan Fink, the company's vice president of marketing.

Such capabilities are crucial for companies trying to improve Web site performance and deal with its sudden and unpredictable traffic spikes, said Jerald Murphy, an analyst at Meta Group Inc. in Stamford, Conn.

Key Differentiator

Adero is certainly not alone in offering such services. High-profile rivals such as Cambridge, Mass.-based Akamai Technologies Inc. and San Francisco-based Digital Island Inc. have been successfully using similar techniques for some time now to speed data delivery over the Web. Both companies boast an impressive roster of customers.

What makes Adero's service attractive is the fact that it can distribute MPEG/MP3 streaming media content to servers close to a user's location — a capability not currently supported by other service providers, said Mike Donahue, CEO of Radiostorm.com, a Sudbury, Mass.-based online music site.

For instance, a user in France who requests a song from Radiostorm will have it streamed from a local server in Paris instead of Radiostorm's central Web servers, Donahue said. ▶

Food Industry

enterprise.com, a marketplace aimed at food services companies.

"It's warp speed now," said Steve Denault, an analyst at U.S. Bancorp Piper Jaffray in Minneapolis.

Minneapolis-based Cargill, Wilmington, Del.-based Du Pont and Cenex Harvest in Inver Grove Heights, Minn., said Rooster.com will launch May 1. Initially, the three partners will co-own the venture, but they intend to invite other firms in the food industry to invest.

"There's not much [bottom line] growth in the food industry, and this is a tremendous opportunity for companies to address profitability," said John O'Neil, a food industry analyst at PaineWebber Inc. in New York.

The Rooster.com partners didn't disclose how their exchange will charge for transactions, but online food exchanges are typically taking a fee of about 1%. That creates a potential $7 billion market — 1% of the U.S. domestic food market, said Denault.

Analysts said they expect Rooster.com will become the central marketplace for the U.S. farming industry. "Cargill brings an immense amount of resources to the table," said O'Neil. But Denault said some

farmers may be hesitant to work with a site that's dominated by a few large buyers of agricultural goods.

At the other end of the food supply chain, Microsoft and Alpharetta, Ga.-based Radiant Systems' Foodenterprise.com will be the first of a series of retail-oriented trading communities expected from the companies.

Foodenterprise.com, which will launch in the second quarter, will allow restaurants to purchase supplies and access hosted applications from Radiant, such as those for inventory management and labor scheduling, and Microsoft applications, such as Hotmail and Office.

Other areas of the food market are expected to form online marketplaces next. Several initiatives have sprung up, mostly

in niche markets. Gofish.com Inc. in Portland, Maine, for example, operates a site for the seafood industry. But others have wider ambitions, such as GlobalFoodExchange.com in Atlanta and Foodtrader.com Inc. in Miami.

Market Positioning

GlobalFoodExchange.com is "well positioned and well capitalized," said O'Neil, adding that the project could emerge as a winner if it manages to strike alliances with large food processors. Both GlobalFood-Exchange and Foodtrader.com are already thinking beyond the basic online marketplace and plan to integrate buyers' and sellers' back-end software systems with the site.

One exchange for the entire industry may emerge over time, with a handful of niche markets on the side, O'Neil said.

For food producers and distributors, the exchanges make it easier to locate buyers and sellers. Peter Gryska, general manager of Seafood Wholesalers Inc. in Houston, has been using GlobalFoodExchange.-com for about six months to buy and sell fish. "I am still getting primarily the market price," said Gryska, "but the cost of purchasing is lower."

Gryska said that although the online exchanges are good at matching buyers with sellers, most deals still end up being concluded afterward on the phone. ▶

AT A GLANCE

Food Online

Key initiatives in the online food marketplace announced last week:
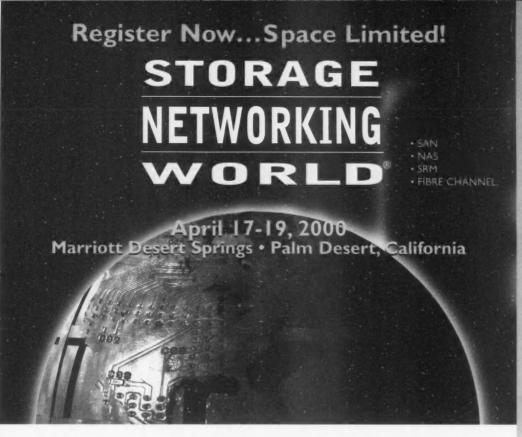
■ ROOSTER.COM

Who: Cargill, Du Pont, Cenex Harvest States

What: Farmers buy supplies, sell produce

When: Launches May 1

■ FOODENTERPRISE.COM

Who: Microsoft and Radiant

What: Food services buy supplies, run hosted applications

When: Launches in Q2

the commute

There's no such thing as road rage when you commute in your slippers. As an independent professional, you can work the way you want. Whether you're a virtual CIO, sales consultant, or anything in between, you're a guru. And now you have a home on the web. A steady stream of projects, resources like health insurance and tax tips, and a place to connect with other gurus just like you.

guru.com.

Power for the independent professional

HP Deepens ASP Tracking, Debuts Multiprocessor Server

OpenView Venture puts app, network performance data into a business context

BY SAMI LAIS

USING AN application or network service provider may become a little less risky with Hewlett-Packard Co.'s introduction today of a Web-based reporting package.

OpenView Venture essentially offers HP's Network Node Manager as a service. The service lets service providers give detailed data on how each customer's applications and networks — not just the provider's — are performing.

"Most application service providers today just don't have the tools to deliver such performance metrics," said Stephen Elliot, an analyst at Gartner Group Inc. in Stamford, Conn.

Venture Foundation, a basic framework, will be free, said Tom Majors, general manager at HP's service provider organization. The cost of modules will be calculated as a pay-as-you-use service. Venture Network lets systems managers get Network Node Manager data via a Web browser. Venture Customer Experience reports on electronic-business application performance.

The combined data will put performance data in a business context, Majors said. Users will be able to query reports on such data as the number of hits on a page on their Web site, and how much revenue

those hits have generated.

Freddie Mac Corp., the mortgage-loan purchaser in McLean, Va., has used the services of one of HP's Venture module partners, Keynote Systems Inc. in San Mateo, Calif., to measure performance of its Web applications, said Bernard Sottili, Freddie Mac's director of product management.

Keynote monitors, analyzes and reports on Web site traffic. Every 15 minutes, Keynote's 350 PCs around the world access and index 40 top business Web sites and collect similar data on the user's site. Keynote users compare their site performance with indexed results.

Availability One Issue

Freddie Mac is developing monitoring of its Web applications performance. Network and application availability is "only one piece of the pie," Sottili said. "If an application is available but hanging, availability doesn't mean anything."

The Keynote data is just one of the "pieces we're pulling together," Sottili said. But outsourcing Web applications has been out of the question, he said, citing lack of feedback and control.

"If something goes wrong, you don't hear it from your application service provider, you hear about it because your customers are calling up and going berserk," which is too late, he said.

Calling the HP Venture model "very solid," Elliot suggested it could make application service providers more attractive to enterprise users.

Sottili agreed. If it works as HP claims, and a service provider "could say, 'Here's a highly integrated tool that you can take advantage of on Day 1,' they'd have a pretty powerful tool for selling to institutions like Freddie Mac," Sottili said.

Venture pilots begin May 1, and general availability is set for July 1. ▶

Win 2k users will get 30% performance boost for the price of four-way systems

BY JAIKUMAR VIJAYAN

HEWLETT-PACKARD Co. this week will announce a six-processor server designed for Windows 2000 that it claims will offer price/performance that's significantly better than similarly-sized systems from rivals.

The servers — which HP will offer at the price of its current four-way systems — will deliver a 30% application-level performance boost over existing quad-processor boxes.

What sets the new LH 6000 and LT 6000r apart from the competition is the fact that users will get six-way performance more cheaply than current server designs permit, said Chris Bennett, an HP product manager.

Currently, the only option available to most users who want to upgrade their 4-way Intel servers is to buy and pay for another four-processor board — even if they use just two of the additional processors.

HP's new servers implement a homegrown technology that allows the company to deliver six-processor boxes, Bennet said. No other major vendor currently offers this capability, he claimed.

"What's interesting here is the pricing ... by essentially giving away two processors to the customer," HP is trying to push customers to buy new

servers, said Kelly Spang, an analyst at Technology Business Research Inc. in Hampton, N.H.

Pricing for HP's new boxes starts at $7,299. They are based on Intel's 550-MHz Pentium III Xeon processors with 4GB of memory — expandable to 8GB — and 216GB of internal storage. In comparison, Compaq Computer Corp.'s four-processor ProLiant 5500 server tops out at 4GB of memory and 182GB of disk space.

Scalability is Crucial

Inexpensive scalability is crucial at a time when Internet applications are quickly saturating the servers put in place to run them, said Stephen Ippoliti, a senior e-commerce strategist at Qwest Internet Solutions Inc., an Internet hosting and application service provider in Denver. "Customers appreciate the chance to increase headroom at aggressive price points," he said.

Qwest, which is planning on buying several of the new HP systems, will use them as database servers for its Web hosting operations, Ippoliti said. ▶

Rail Web Site Helps Clients Design Best Shipment Route

Industry site tracks, traces freight status

BY LINDA ROSENCRANCE
ST. LOUIS

Railinc Corp., a Cary, N.C.-based railroad industry technology vendor, last week launched Steelroads.com, a Web site designed to make it easier for customers to ship freight with more than 300 freight rail carriers.

The launch was announced here at the International E-rail Freight conference presented by the London-based International Quality and Productivity Center.

The brainchild of the railroad industry — it was first conceived in December — Steelroads uses electronic-business technologies to allow customers to determine the best way to ship their freight, according to Allen West, a

Railinc vice president.

Using Steelroads, customers can locate and determine the most efficient route for their shipments, specify the equipment their shipment requires and determine whether that equipment is available along the entire route.

Customers are also able to track and trace their shipments from origin to destination using NetREDI, an Internet e-commerce tool that customers can use to determine the location and status information of their shipments.

Using Steelroads, customers can also communicate directly with the appropriate person at every participating rail carrier to determine which carrier best meets their needs. In addition, customers can submit their shipping requirements as to as many rail carriers as they choose.

The information on the Web site is available in English,

Spanish and French. Steelroads provides access to railroads via the Internet, telephone and e-mail.

Paul Neville, a vice president at Railinc, said the information and services on the site will be upgraded regularly. "We're asking for customer feedback to see what the marketplace wants," he said. "This is not just what we want."

In the future, Steelroads will enable customers to generate and transmit equipment requests for their shipments to all participating railroads and determine the status of those requests. ▶

SCO Makes ASP Dash With Client System

New version will access diverse platforms, use novel pricing model

BY DOMINIQUE DECKMYN

THE SANTA CRUZ Operation Inc. (SCO) is positioning its Tarantella application-broker technology as a platform for application service providers (ASP).

A new Tarantella version due in May will be offered to ASPs under a novel per-hour pricing model.

Tarantella, which competes with Fort Lauderdale, Fla.-based Citrix Systems Inc.'s MetaFrame, allows any client system equipped with a Java-enabled Web browser to access applications running on diverse server platforms, including Windows NT, Unix and IBM mainframes.

Santa Cruz, Calif.-based SCO will sell Tarantella ASP Edition directly to service providers. The new edition will be priced per user hour on a pay-as-you-go model. The price will include soft-ware upgrades and support.

Greg Blatnick, managing director at Zona Research Inc. in Redwood City, Calif., said SCO's attempt to win the ASP market is "a long shot." Blatnick said Tarantella so far has mainly appealed to SCO's existing Unix user base. "They certainly are trying to become a Unix version" of Citrix's MetaFrame, said Blatnick, adding that the product may do well because of SCO's large installed base in small business and certain vertical industries such as retail.

Chris Clabaugh, CEO of Allegrix Inc., an ASP in Santa Clara, Calif., is using Tarantella to combine applications running under Windows, Linux and other operating systems into a seamless whole. He said no other software will do this. "If you're [running] Windows everywhere, Tarantella doesn't have a great story," said Clabaugh.

SCO is a minority shareholder in Allegrix and is working with the company to add ASP features such as tracking and billing to Tarantella, said Clabaugh.

"ASPs should definitely consider Tarantella," said Peter Lowber, a research director at Gartner Group Inc. in Boston. "[SCO has] a good product and a good approach to server-based computing."

But Lowber said it will be difficult for SCO to compete with Citrix's strong market position and well-established channel. ▶

> [SCO] certainly [is] trying to become a Unix version of Citrix.
>
> **GREG BLATNICK, MANAGING DIRECTOR, ZONA RESEARCH INC.**

SCO Welcomes Linux Competition

The Santa Cruz Operation's UnixWare 7 is the operating system that's squeezed between Microsoft Corp.'s Windows 2000 and Linux on the low end and Sun Microsystems Inc., IBM and Hewlett-Packard Co. on the high end. The latest systems figures from International Data Corp. (IDC) in Framingham, Mass., show that SCO's market share is shrinking as Microsoft and Linux make headway in servers used for departments, file-and-print applications and e-mail. *Computerworld* interviewed SCO President **Doug Michels** and **Mike Orr**, senior vice president of worldwide marketing.

Q: Has Linux made SCO Unix-Ware superfluous?

Michels: There's room in the world for several operating systems. We think Linux has restored balance to the industry, which was veering heavily into a Microsoft totality, as we saw happen with the desktop. A lot of people thought that was going to happen with the server with the [increasing popularity of Windows] NT a couple years ago. Now, Linux is showing there are alternatives, but it's still not as stable as UnixWare 7.

Q: The latest purchased-server survey from IDC shows SCO's market share is declining next to Linux and Windows NT.

Orr: IDC is talking about units, not dollars. The price of Linux can vary from zero to thousands. We've seen our revenues grow from 1998 to 1999. The overall Unix market is growing, in revenue terms, even though the unit shares have declined. Linux's 25% of the units sold amounted to $32 million in revenues in a total market of $5.7 billion. The other 75% [of the market] was 99.9% of the revenues.

Q: The bulk of your revenue depends on a network that uses UnixWare for running the reseller's applications. How do you combat this group's substitution of Linux as an alternative to UnixWare?

Michels: Our software represents 5% of the purchase price of the total system. When our reseller sells a system to his customers, about 5% is going to us, and if he took that to zero [by using Linux], it wouldn't affect the buying decision much. The reseller doesn't have the ability to put in Linux and charge the same amount as UnixWare, because he has to break down the amount to the customer, and they know Linux is less. When you look at it from the reseller's point of view, he could conceivably put in a free operating system, but he still has to do the setup and configuration, which he can't charge for with Linux. So it's not an overwhelmingly positive thing for the reseller to give away the free system.

– Robin Robinson, a freelance writer in San Mateo, Calif., conducted this interview.

SEC OKs All-Electronic Stock Exchange

Move may force other markets to upgrade technology

BY MARIA TROMBLY

The Securities and Exchange Commission last week approved a new all-electronic stock options exchange, the first approval for a new stock exchange in 27 years.

Analysts said the New York-based International Securities Exchange (ISE), slated to open May 26, could press other established markets to upgrade their information technology systems.

Larry Tabb, an analyst at The Tower Group in Needham, Mass., said the ISE will have an advantage over traditional

Taking Stock

Founding dates of U.S. exchanges:

Philadelphia Stock Exchange	1790
New York Stock Exchange	1792
Boston Stock Exchange	1834
Chicago Stock Exchange	1882
Nasdaq	1971
Chicago Board Options Exchange	1973
International Securities Exchange	2000

stock exchanges such as the Chicago Board Options Exchange (CBOE) and the American Stock Exchange (Amex) because the ISE won't have to pay for the costs associated with operating a trading floor.

"Through technology, they can match buyers and sellers much more efficiently than the CBOE or Amex," he said. While the traditional exchanges have begun moving to electronic transactions, they also still rely on trading floors to buy and sell.

Dana Stiffler, an analyst at Newton, Mass.-based Meridian Research Inc., said the ISE approval might light a fire under the existing exchanges and push them toward even more automation.

CBOE, for example, made real-time quotes for stocks and options available through its Web site, cboe.com, immediately after the new stock options exchange won approval. But CBOE spokesman Gary Compton said the move was unrelated to the ISE approval.

Compton said 92% of all CBOE orders are already routed electronically, and a full third are executed electronically.

"We already do a lot of what the ISE says they're going to do," he said. "Only we think we do it better, because we have a substantial pool of liquidity already in place."

Trader Interest a Goal

Indeed, analysts said ISE's major hurdle will be to get enough traders interested in using it.

ISE spokesman Richard Pombonyo said the ISE already has enough traders on board to have a functioning and liquid market on the first day of operations. The new exchange has sold 110 market-maker memberships and has already connected about 50 brokerages, including most of the major Wall Street firms.

The make-it-or-break-it issue, according to Tabb, is the user interface. Other exchanges, Tabb said, have foundered because the interfaces were difficult to use.

That doesn't apply to the ISE, said ISE CIO Dan Friel. "We are providing a workstation to our market makers, but a lot of our members have expressed their desire to use their own technology."

To accommodate them, ISE will have an open architecture, and several third-party vendors are developing their own interfaces, Friel said. "We see that as a major advantage of our system." ▶

Chris Dressler, Senior Program Manager, NORDSTROMshoes.com

"So the challenge here was knowing the speed of how quickly we had to bring shoe vendors online."

"We went from 6 to 10 to 20 vendors and we're continuing down that road."

"So how do we rapidly do the development to make all this happen?"

NEWS

Intranet Developers Say Systems, Security Top Priorities

BY MARK HALL
SAN JOSE

Intranets have attempted to manage corporate knowledge and have failed so far, an analyst warned at last week's Intranet 2000 conference. But users here said they are continuing and expanding their intranet efforts and that legacy and security issues remain the top priorities.

Intranets have been good at giving employees, suppliers and even customers access to information, noted Steve Telleen, an analyst at Giga Information Group Inc. in Cambridge, Mass. However, "few companies allow their own employees to publish their own ideas with their own voice," he said, in his keynote speech. Instead, he argued, today's intranets are packed with processed information posing as knowledge.

"Most knowledge management is noise, not understanding," Telleen said. "If we prestructure knowledge, there is nothing we can learn."

According to Telleen, information technology departments are acting like "landed gentry facing the industrial revolution" and often slow down progress. He pointed to companies that "Web-enable" applications rather than create network-based software from scratch as being part of the problem.

Tackling Legacy Systems

But part of IT's mandate is to incorporate legacy systems into the newer intranet architecture.

"We're aware that the paradigm is different. It's no longer just a [mainframe] world," said John Schultz, an information services technical specialist at the Mayo Clinic in Rochester, Minn. He added that it has been critical for his organization's nearly 4-year-old intranet strategy to begin making old applications Web-ready, because that's the information and software people use.

Chad Childers, World Wide Web administrator at Ford Motor Co. in Dearborn, Mich., said his company's portal strategy extends well beyond the intranet. Ford already has 150,000 intranet users, and, with its recent announcement of plans to give every employee a PC and Web access, that number will more than double in a year.

The company's deal with Detroit-based General Motors Corp. and Stuttgart, Germany-based DaimlerChrysler AG to create the Automotive Network Exchange for car industry suppliers will expand that number even further.

And Ford plans to give customers access to the portal, which could easily increase the user population to more than 1 million.

"All this makes security more important than ever before," Childers said. ▶

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EDS, CSC Offer Web Hosting, Net Management Services

Outsourcers plan to use their existing infrastructure to deliver new services

BY JAIKUMAR VIJAYAN

TRADITIONAL outsourcing vendors are rushing to offer Internet services. Last week, two of the biggest — Electronic Data Services Corp. (EDS) and Computer Sciences Corp. (CSC) — launched initiatives offering application hosting and network management services.

Another major outsourcing rival, IBM, already offers services in these areas.

Plano, Texas-based EDS is calling its initiative the Web Computing Suite of Services. It will package Web hosting and network management services that range from fixed-price offerings to custom engagements with large companies.

CSC in El Segundo, Calif., is setting up a similar Web site hosting and online application provisioning unit targeted at corporate and government customers.

Like EDS, CSC will offer fully managed services on Unix and NT platforms with around-the-clock services, including security, conditioned facilities, high-speed network access and integrated service management. And like EDS,

CSC is hoping to cash in on its existing hardware infrastructure and networks to deliver the new services.

"What they are trying to do is make use of their very deep IT skills and services and deliver it more cost-effectively to end-user organizations," said Andrew Efstathiou, an analyst at The Yankee Group in Boston.

EDS's new offerings are aimed at its existing clients as well as dot-com companies

and medium-size businesses, said Tom Ament, an EDS vice president.

Under its fixed-price schemes, typical Web site hosting fees will range from $300 to $600 per month per server, while subscription-based application provisioning services range from $125 to $600 per user.

Wholesale Model

EDS will use its existing data centers and system infrastructure worldwide to offer the new services either directly to clients or through what it calls a "wholesale" model to other

application service providers and dot-com companies.

"Where others are talking of spending tens of millions of dollars in building a hosting infrastructure, we plan to spend hundreds of millions on top of that to deliver new services," Ament said.

CSC's global hosting service, will feature dual firewalls, continuous intrusion detection, security-hardened operating systems and virus detection.

"[CSC's] experience in providing secure, mission-critical systems to the federal government and others allows us to implement unmatched security

What [EDS and CSC] are trying to do is make use of their very deep IT skills and services and deliver it more cost-effectively

ANDREW EFSTATHIOU, ANALYST, THE YANKEE GROUP

features that are essential to the e-business needs of clients," CEO Van B. Honeycutt said. ▶

Performance Monitoring Options Narrow

Mission Critical to buy two competitors

BY SAMI LAIS

The field of network and application performance monitoring vendors became even tighter last week when Mission Critical Software Inc. announced that it would acquire NetIQ Corp. in Houston in a stock swap valued at $1.42 billion.

Santa Clara, Calif.-based Mission Critical also announced

that it plans to buy Ganymede Software Inc. in Morrisville, N.C., in a separate deal for $171 million.

One NetIQ customer said the merger with Mission Critical Software could help his company in the long run. "It was a surprise to me," said Kurt Guerrero, information technology infrastructure manager at Northern Trust Bank in Chicago.

"But it's kind of exciting for me," Guerrero said. "I've got a couple of powerful tools — one I'm using and one I'm looking

at — and now they'll both be owned by the same company."

Northern Trust uses NetIQ's AppManager software to monitor Windows NT file and print servers. And bank officials just "talked with a Mission Critical sales rep last week for a quote on their OnePoint" directory and network availability product, said Guerrero.

The three-way merger, expected to be completed in June, will create a single, as-yet-unnamed company with a market capitalization of $2.9

billion, according to a Net IQ spokeswoman.

Look for Operations Manager from Mission Critical and AppManager from NetIQ to be integrated into a new combined suite, said Tom Kemp, vice president of marketing at NetIQ. The Ganymede products will be integrated later but will continue to be available as stand-alone packages, he said.

"It's not going to be one big honking product," Kemp said, but rather a series of integrated modules.

The new company's focus will continue to be on Windows platform e-commerce, Kemp said. ▶

BRIEFS

Cisco Buys Atlantech

Cisco Systems Inc. is buying Atlantech Technologies, a Glasgow-based company that makes software to help configure and monitor network hardware. San Jose-based Cisco said the stock deal, valued at about $180 million, will expand its offerings of network management products for integrated data, voice and video networks. Cisco held a 9.5% stake in the privately held Atlantech, which will become part of the Cisco Communications Software and Network Services Group.

MCI Settles Lawsuit With Cable & Wireless

MCI WorldCom Inc. has agreed to pay Cable & Wireless USA $200 million to settle a lawsuit filed last April. Vienna, Va.-based Cable & Wireless had charged WorldCom with failing to provide important information about MCI's Internet business when Cable & Wireless acquired it in 1998. Cable & Wireless agreed to drop its complaint as part of the settlement.

SGI Sells Off Cray

Tera Computer Co., a Seattle-based

producer of high-end computers, agreed to purchase Silicon Graphics Inc.'s (SGI) Cray supercomputer business for an undisclosed price. Following the purchase, Tera will create a new combined company called Cray Inc., which will have annual revenue of more than $200 million and about 900 employees. Tera will take over the Cray brand and SGI's Cray supercomputer product line and service contracts. SGI bought Cray in 1996.

Online Storage Service

Centripetal Inc. in San Diego will introduce this month its Data Services Suite, an Internet storage utility service that allows companies to

outsource data storage on a pay-as-you-grow basis. The first location for the storage data centers will be in San Diego, followed by San Jose, New York, Los Angeles, Houston and Seattle. Pricing starts at 2 cents per MB per month.

E-Pass Sues 3Com

Smart-card vendor E-Pass Technologies Inc. in Dublin has filed suit in U.S. District Court against 3Com Corp., charging that the Santa Clara, Calif.-based company infringed on E-Pass' 1994 patent for a "multifunction credit-card-size computer" when it developed the PalmPilot electronic organizer. Separately, 3Com said that America Online Inc.,

Motorola Inc. and Nokia Corp. agreed to buy stakes in 3Com's Palm Inc. spin-off at the asking price of $38 per share when the unit goes public.

Short Takes

Consumers subscribing to New York-based TIME WARNER INC.'s broadband cable services after it merges with Dulles, Va.-based AOL won't be locked into using AOL or an affiliated Internet service provider, the companies said. . . . MICROSOFT CORP. said it would buy PEACH NETWORKS LTD., an Israeli provider of enhanced TV services technology for digital television, for $43 million.

PATRICIA KEEFE

Tax Net commerce

I T'S AN ELECTION YEAR, and that usually means lots of huffing and puffing over content-free issues. It's also the roaring '00s, so it isn't surprising that politicians nationwide are latching onto the cyber-savvy sounding, but relatively risk-free, concept of a tax-free *e*-economy. Not a day goes by without some

opportunistic yahoo stepping up to the mike to take the pledge.

Talk about a nonissue! The oft expressed fear that we can't tax Net businesses right now because the whole Net economy is so fragile that it will come crashing down around our ears is laughable.

A bigger worry ought to be today's exaggerated values of dotcom stock leading to inevitable reverberations rippling through the stock market tomorrow.

For one thing, there's the issue of fairness. If we're going to say taxes should be paid on certain products, those taxes should be paid no matter where the point of purchase is. All for-profit enterprises should carry the load, regardless of whether their address is virtual or how their business is conducted.

Don't worry about the surfin' safari; it's here to stay! Consumers have discovered the Internet, and buying and selling will never be the same.

If consumers abandon the Net, it won't be because they have to pay a sales tax — some-

PATRICIA KEEFE is editorial director of *Computerworld*. You can contact her at **patricia_keefe@ computerworld.com.**

thing most people take for granted anyhow. The real issue is customer service.

You shop online because it's supposed to be convenient — day or night — and fast. Because you can cover a lot more ground in one virtual shopping spree than you ever could in real time. You do it because you (usually) have more choices and a better chance of finding what you're looking for.

And yet despite the promise, there are a lot of truly wretched Web sites out there. That's the real threat to a vibrant Internet economy, and correcting it calls for information technology departments to step in and work in partnership with the business side to build technology that ensures a pleasant experience online and an efficient operation behind the scenes, throughout the life of the transaction.

This is where the battle for confidence in the online purchasing experience will be won or lost. Not at the checkout counter, when some piddling sales tax is assessed and added to the bill. ▮

DON TAPSCOTT

Meeting online can save money, boost productivity

I BM RECENTLY WRAPPED UP e.forum2000, an extraordinary three-week sales conference involving 2,500 employees and business partners from more than 90 countries.

IBM's satisfaction with the conference: high. Travel costs and effort associated with it: virtually zero.

The conference was held online. Delegates participated at any time of the day or night from their homes and offices, using a PC, browser and telephone line.

Not so long ago, Web collaboration meant e-mail, chat rooms and document-sharing. No more. Creative Web-based companies are creating rich multimedia environments that closely resemble — and in some cases are better than — real-time, in-person meetings.

The appeal of such online conferences goes beyond the obvious savings of travel time and

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money. Ken Thornton, an IBM general manager, says IBM can also reach more people, increase customer "face time" — since salespeople spend less time outside their territories — and create reusable learning modules.

Compared with last year, IBM was able to more than triple the number of conference participants. Yet the company slashed the cost of the conference by more than 60%. Since staff weren't being taken from their offices and hotel bills weren't piling up, organizers could space the conference over three weeks instead of the typical three days.

As a keynote speaker for the conference, I couldn't have had it easier. My presentation slides were uploaded to a secure Web site. I logged on to the Web and viewed each slide while recording my remarks over the telephone. I could simply erase and rerecord my remarks for a particular slide if I wasn't happy with them.

Delegates could log on and listen to my remarks while viewing the slides at the times that best suited them. Unlike with a real-time speech, delegates could pause and review my remarks or even spread my speech out over several days. Delegates asked questions, and I replied online.

A conference like IBM's can offer keynote speakers and panels, breakout sessions, exhibits, a reference library, open space for conversation about issues of interest, a bookstore, private

MARCH 6, 2000

mobile insights
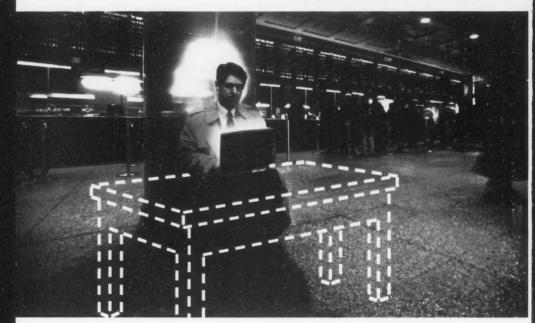
Handhelds in the Enterprise:
Palm OS and Windows-Powered Devices
Gaining Acceptance

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IN THE
ENTERPRISE

PALM OS & WINDOWS-POWERED DEVICES
Gaining Acceptance

James Cummiskey,
Theresa Nozick,
Tim Scannell,
Mobile Insights

At last Fall's Go Mobile conference sponsored by Mobile Insights, 200 of the nation's top IT executives responsible for purchasing mobile computing technology for their organizations were questioned about their adoption of handheld systems in the coming 12 months. Their responses revealed not only that handheld systems have already arrived in their organizations in a big way, but also that IT is getting ready for an explosion of handheld devices in the coming years.

The IT world has largely embraced Palm Computing's Palm OS. However, Microsoft's Windows CE (since rebranded as Microsoft's "Windows-powered" OS) is very much on their radar screens and within the next three years could cause dramatic changes in the handheld market. That could lead to a shift in the balance of power between these two major handheld operating systems. Fueling the adoption of handheld systems and other portable "thin client" devices is the expected widespread adoption of wireless data communications by these IT organizations.

Approximately 61% of the IT organizations at Go Mobile said they would purchase Palm OS-based systems over the next 12 months, compared with 32% who favored Windows-powered (Windows CE) systems. For these 200 IT executives, the scales will balance out in three years, but with Palm maintaining just a slight edge (45%) over Windows (42%) by the year 2003. Mobile Insights, while agreeing that Windows-powered systems will gain market share, predicts that Palm will maintain a sizable lead for the foreseeable future. But, Windows-powered handhelds will make steady gains, reaching about a 23% market share by 2003. (For more statistical information on handhelds adoption, see story on page 7.)

Windows will achieve some gains over the Palm OS for the following reasons: efforts by Microsoft Corp. to streamline the operating system by targeting specific versions at vertical enterprises; plans to increase information technology awareness; and the connectivity capabilities of Windows CE for use within a corporate enterprise. Microsoft will also this year put a stake in the ground to reach its objective to solve current ease-of-use problems by enhancing the user interface and making the software easier to synchronize with desktop and remote host systems. These two issues may be the most significant determining factors to Microsoft's resurgence.

Specifically, the software will be enhanced to make it easier to synchronize files and data online by dialing in to an Internet service provider (ISP). That should make Windows-powered devices more attractive to corporate users, who are

increasingly using the Internet as a framework for e-mail and for tapping in to their company's information resources.

Many of these issues will be addressed in the next Windows-powered upgrade, which is expected soon. However, Microsoft is also working with a number of industry groups and companies to immediately solve such issues as enterprise connectivity and wireless messaging.

Palm's Advantages

While Microsoft makes improvements in its Windows-powered OS, 3Com Corp. will continue to upgrade the Palm OS and hardware. In addition, third-party hardware manufacturers will continue to unveil products that expand the capabilities of the Palm platform. Factors that will challenge the spread of Windows include the following:

• Palm's announcement Feb. 22 of its first color-enhanced Palm device. The Palm IIIc ($449) features a highly readable, bright TFT display and still features the long battery life (two weeks) and rechargeable battery capability of the noncolor Palm devices. Concurrently, Palm announced new add-on applications that take advantage of the color display, including the Album to Go digital photo viewer; an enhanced calculator with business and scientific functionality; full-color backgammon; and free interactive Internet service from AvantGo. Rand McNally will also soon introduce StreetFinder Deluxe 2000, mapping and navigation software for downloading color maps and directions.

• Palm's introduction of the Palm IIIxe, which has a new dark slate case and 8M bytes of memory ($249). The company is marketing it as a "customizable" device that will operate with many of the add-ons available, including the Palm Portable Keyboard ($99), modems, voice records, digital cameras and global positioning satellite (GPS) devices.

• Palm's release Feb. 22 of Version 3.5 of the Palm OS, which features enhanced viewing options, including dual appointment/to-do item display; improved security, which allows password protection of private and personal entries; quick duplication of address records; faster HotSync; support for infrared HotSync; and an alarm snooze button.

• The announcement in early February that Palm intends to integrate Adobe Portable Document Format (PDF) technology into Palm devices to deliver new content such as electronic books and business documents.

Several strategic partnerships in the past six months have involved the Palm platform. These include deals with Sony (focusing on its Memory Stick technology), Nokia (which agreed to develop digital phones based on the Palm OS) and Riverbed Technologies (which has successfully rolled out enterprise solutions for the Palm platform).

• Palm's price cuts in early February, which made the low-end Palm IIIe available for $149 (reduced from $179) and the high-end Palm Vx available for $399. The wireless-enabled Palm VII is now priced at $449. For at least the near future, the PalmPilot series will remain the system of choice for those looking to replace a pencil-and-paper personal information manager with an electronic PIM.

• Finally, there is 3Com's decision to spin out its Palm division sometime early this year, setting it free to grow as both a hardware and operating systems developer. Closely tied to this strategy will be efforts to license the Palm OS to a variety of mobile appliance manufacturers.

A Push from Handspring

Another push for Palm may come from Handspring, with its Visor handheld system and Springboard expansion slot. The Visor systems will compete with Palm and Windows devices but will make use of the Palm OS under a licensing agreement struck with 3Com. So while Visor sales may chip away at Palm market share, the presence of the Palm OS as a handheld standard will be strengthened. The key Visor feature is the Springboard expansion modules, which are small and thin hardware components that easily slide in and out of a slot on the back of the Visor. Handspring elected to develop its own expansion slot technology, as opposed to utilizing an existing standard, such as CompactFlash. The company argued that it was able to make its modules plug-and-play capable and didn't believe CompactFlash would accommodate this.

Handspring has announced at least 18 Springboard modules, most of which were developed by third-party companies. The modules developed by Handspring so far include modem, 8M-byte Flash and Quick Backup modules. Others have developed pagers, voice recorders, GPS Radio and Bluetooth communications; Diamond Multimedia has created an MP3 module. The success of Springboard and ultimately Handspring depends on its ability to court major players to develop innovative and useful Springboard modules.

The Palm devices currently don't offer any type of expansion slots, although Palm is seriously looking at adding such an option in future systems. Windows-powered devices offer a single Compact Flash slot, which allows third-party developers to extend the platform.

Palm's Technology Limitations

Over the next several months, Palm plans to increase its emphasis in two key markets: Consumer electronics (particularly college-age users) and corporate IT. Last month, Palm addressed one technology issue that is a big selling point for Windows-powered devices: Color support. One other key advantage Windows-powered devices seem to have over the Palm is the availability of an expansion slot, which allows users to customize their systems with a variety of add-in technologies. To date, the Palm devices don't have expansion slots to handle such things as multimedia sound and video files or stereo MP3. As a result, they can't download and play music files from the Internet, which is becoming popular among consumers. Palm will continue down the path of download through serial synchronization.

However, with alliances made last year, one with Riverbed Technologies and one with Sony, Palm has made significant strides toward providing Palm OS-based products for both enterprise and consumer users. Last November Sony Corp. announced a partnership with Palm Computing that allows the companies to swap technologies and develop new products. Under terms of the deal, Sony will create a line of handheld devices based on the Palm OS that will offer a variety of audio/visual capabilities as well as a wireless communications capability. For its part, Palm has agreed to work with Sony to develop a new version of its operating system that will support Sony's Memory Stick and other planned technologies.

Palm also announced in October a four-year agreement with Riverbed Technologies to license its ScoutSync and Scout IT synchronization software and to rebrand them as

the Palm HotSync Server. The goal is to create a single Hot-Sync interface for all applications. Sybase Inc., Computer Associates International Inc. and Tivoli Systems Inc. plan to develop management interfaces for the HotSync server.

The PalmPilot has defined the standard for portable personal information management (PIM). The company has managed to sell millions of these small devices, even though they've only been available for a few years. There are also hundreds of practical software programs available — many so-called shareware — designed to enhance the basic functions of the systems: Address, Agenda, Calculator, Date Book, Calendar, Memo, To Do List and Mail (with the Palm III and later versions). These add-on programs, which can easily be plugged in to the PalmPilot during a HotSync, can extend its rudimentary word processor (the Memo function), add a sketchpad capability and adapt the unit to accept an optional keyboard.

3Com also claims to have some 4 million Palm customers and 17,000 development partners, which translates into a two-thirds-plus share of the overall handheld computer market. A number of these development partners also concentrate on highly specialized vertical markets that are fertile ground for third-party software efforts.

Advantages of Windows-Powered Handhelds

The biggest advantage of the Windows-powered (Windows CE) OS is that it has its roots in the Win32 API, which means you can use virtually the same development tools used to create standard Windows applications. This also means there is literally an army of Windows developers who can easily build or port applications to the smaller

Windows environment because it's a subset of it. The Windows-powered OS is also highly scalable, starting at about 512K bytes in size, which makes it a natural for embedded applications, such as TV set-top boxes and car PCs.

Another advantage of Windows over the Palm is its support for expandable storage. While Palm eventually plans to support some industry standard expansion such as CompactFlash and SmartMedia, the units presently can't accommodate any type of storage. There are some exceptions, however, such as the TRGpro, from TRG, which is basically a Palm III device with an expansion module that holds CompactFlash expansion cards.

The scalability and flexibility of the Windows-powered OS is a double-edged sword, however, because it is a much larger operating environment than the Palm OS and has the potential to grow that much bigger as options are added on top of the basic core software. Compared to the Palm OS, Windows has significantly higher memory and processor speed requirements, much like the WinTel desktop trap, which requires that users add more and more memory or upgrade to an entirely new processor platform to keep pace with developments in applications software. This means faster and more powerful Windows devices will be more expensive than Palm OS systems.

The Future of the Windows-Powered OS

Microsoft has been quick to answer the call from users and system developers. Last year, the company updated its operating system to accommodate more software and support a color display. That marks the third time the company has officially upgraded the software, this time adding more

Handheld PCs Move into the IT Mainstream

Handheld PCs are rapidly expanding into the IT enterprise. Previously these devices were purchased by end users. Today, they are on the IT shopping lists of some of the top firms in the nation.

The current market dominance of Palm OS–powered devices (80%) is expected to continue (see chart below). However, Windows-powered handhelds are expected to gradually erode Palm's market share if Microsoft can successfully reposition its powerful Win32 OS to compete in the enterprise.

As handheld sales continue to expand, the growth in wireless Web-enabled smart phones is expected to far surpass handheld PCs during the same period. The convergence between communications and computing devices will continue as enterprise users discover the power of accessing their critical bits of data.

There are about 300 million mobile phones in use worldwide, and this figure should double by 2003. Many of these phones will incorporate a Wireless Application Protocol (WAP) microbrowser for accessing the Wireless Web. While there were 7 million wireless/mobile data subscribers in 1999, this figure is expected to increase at least fivefold by 2003.

Corporate IT managers are being challenged by security, support and accountability as handheld PCs slowly find their way into the enterprise. However,

handheld PCs can be successfully integrated into the enterprise only if the devices are managed and supported as part of the overall IT infrastructure. Handheld devices can provide a powerful mobile access point into mission-critical enterprise data, but only if IT professionals can manage them.
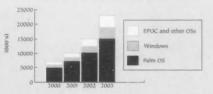
Meanwhile, the lines between the capabilities of handheld and desktop enterprise applications continue to blur as companies like Oracle Corp. introduce powerful transactional database applications for handheld devices. Solutions such as Oracle8i Lite enable mobile workers to maintain continuous access to their data on both Palm OS and Psion EPOC platforms.

Ubiquitous WAN wireless data communication channels (such as CDPD and packet radio) are now available to provide low-cost connectivity to workers in the field. The prices of handheld devices make them an attractive value proposition for corporate users.

Software applications are also providing an easier and more cost-effective way for a company to deploy and support mission-critical functions on handheld devices. Solutions offered by Puma Technologies with their Enterprise IntelliSync product, Riverbed's Scout family of products and Palm's HotSync Server application allow handheld devices to be integrated into the network infrastructure. Specific value-adds offered by these products include asset tracking, software distribution, synchronization and centralized backup. IT managers are now able to control the applications and data stored on handheld devices from a centralized location. Consolidating the management and control of handheld devices allows managers to reduce the total cost of ownership of handheld devices.

Whether using their handheld PC to access a sales prospect's Web site on the Internet; submitting an order to a back-end corporate database; or sending an e-mail to ask the help desk a support question, users want the richness of the data sent to their devices. ▌

Growth in Handheld PCs

Mobile Insights' projected growth of
handheld device sales from 2000 to 2003

Windows 2000

▶ **Q & A**

Mobile users win big
with Win 2000 features

The advantages offered by Windows 2000 to mobile computer users represent a quantum leap over those available through Windows NT. To better understand those advantages, Windows 2000 Advantage news editor Bruce Hoard interviewed Bob Williams, managing partner at Enterprise Certified Corp., a consulting services, training and IT certification body. Williams is co-author of the forthcoming "Ultimate Windows 2000 Guide" (with Mark Walla) and will debut as a Windows 2000 Advantage columnist in March.

Q: How will laptop computer users benefit from a Windows 2000 environment?

Williams: Very clearly, IntelliMirror is the biggest benefit. Whether they are online to the network or working independently, IntelliMirror lets people preserve consistent desktop settings, update and access applications and synchronize files stored either on laptops or servers.

Q: Please give an example of how that has value for a traveler.

Williams: Assume a person is traveling and they have a group of files that they know they are going to be working on. These files are on their server at work. With IntelliMirror, they can go in and move those files to the laptop and work on them off-line. Later, with the help of IntelliMirror, when they do log back on to their work server, everything on their laptop will be synchronized with the server files, so the server files are updated and identical to the laptop files.

Q: Please give another example.

Williams: OK. It's what I call "DLL Hell." Quite often, because of the limited disk capacity of laptops, you will find yourself removing files.

During that process, you might accidentally remove an important component of an application — a DLL or something of that nature. When you reconnect with your server, IntelliMirror automatically seeks out and loads the latest DLLs for your applications so any of them with missing components are reconsolidated.

Q: What else does IntelliMirror do for Windows 2000 users?

Williams: Another advantage is the advanced plug-and-play capacity that exists with Windows 2000. If you're on the road and you need to hook into any kind of device, Windows 2000 will go out there and detect what you have and make that particular device operable for you as you move from one location to another.

Q: How does Active Directory contribute to the mobility of Windows 2000?

Williams: Because of Active Directory, you have the ability to move from any computer, including a laptop, and hook into the network. You are not locked into always having to log in to the same machine.

So, for example, if you are traveling with two or three different people and you just have one laptop among you, any one of the people in your party can use the laptop to log in to their server.

When they do so, they will be presented with their profile, their desktop, their applications and their own directory. ▶

For the full text of this interview, visit **www.Windows2000Advantage.com**.

What is Windows 2000 Advantage?

Windows 2000 Advantage is the partnership among Microsoft, Compaq and Computerworld Enterprise Business Solutions to inform IT leaders about Windows NT and Windows 2000 technology by providing timely, useful information — in print and online — for planning and deploying Windows NT and Windows 2000 with Compaq services and solutions.

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▶ Portables

Hot-docking, battery life lead advances

By Steve James

Portable PC users who travel, go to meetings or swap accessories will find much to like in Windows 2000, which bends the old rules of mobile computing to make portability easier.

For road warriors on long plane trips, Windows 2000 provides longer battery life for laptops. For on-the-go people who want to take a PC to a meeting, Windows 2000 lets them temporarily undock from the office LAN without losing the network connection. Those who want to swap disk drives in a portable will find they can do so in Windows 2000 without rebooting.

Unprecedented emphasis on mobility

"Windows 2000 is the first operating system from Microsoft that has many specific features geared to mobile users," says Peggy Murrell, manager of operating systems and software technology planning for Compaq commercial portables. "Windows NT and Windows 98 had some of these features, but not all of them."

Windows 2000 extends battery life by shifting power management from the computer's BIOS to the operating system. "The OS can then control the power-down of individual devices, such as the CD-ROM drive or PC cards, based on usage.

By selectively powering down devices that aren't being used, the OS can improve battery life," Murrell says.

Enhanced power management

Bob Green, director of advanced architecture and software technology in the portable PC division of Compaq, has been using Windows 2000 on a Compaq portable for months. "To me the advantages of Windows 2000 include good power management support similar to that in Windows 95 and Windows 98 along with the reliability of Windows NT," he says.

The longer battery life offered by Windows 2000 is a result of the Advanced Configuration and Power Interface (ACPI). Under the old power management architecture, Advanced Power Management, when users went on the road they cut the processor speed down from 300 to 150 MHz or from 260 to 130 MHz, because by cutting the processor speed they used less power. Depending on the system and the battery, the combination of cutting the processor speed and reducing the screen backlighting to the minimum could increase battery life by about 30%.

Under Windows 2000, the user doesn't

need to understand the specifics required to manage battery life because the operating system does that automatically. For example, ACPI governs processor speed by seeing what's running and how much power is needed to run it.

"Having the operating system be intelligent enough to do that for you is a real-life advantage," Green says.

Sleep mode saves battery power

The inclusion of a sleep mode feature is another way Windows 2000 conserves battery power. Light sleep, or standby, uses some battery power, but tests show notebook batteries can last a week or longer. Deep sleep, or hibernate mode, uses no power, but accelerates PC start-up by having saved all open applications and files to the hard drive. Booting up from hibernate mode can take 30 seconds vs. a full minute for a cold boot.

Windows 2000 also improves the way sleep mode is handled. Like other power management features, the sleep mode function previously resided in the BIOS chip of Compaq machines but now is incorporated into the Microsoft operating system. ▶

To read the full text of this story, visit **www.Windows2000Advantage.com**.

www.Windows2000Advantage.com

Merrill Lynch Puts Stock in Blackberry To Extend Wireless Reach

By Tim Scannell

As one of the top financial management companies in the world, Merrill Lynch has its hands in some of the hottest high technology segments in the industry. These areas range from client/server systems and networked applications to the expanding markets for wireless phones and Internet appliances.

At last count, the company had field offices and divisions in 44 countries and total client assets exceeding $1.5 trillion. Not surprisingly, keeping all these employees informed and connected is one of the top concerns of Merrill Lynch's IT staff, which is charged with keeping the current infrastructure running and newer alternatives on the drawing board.

So, it's not surprising that when faced with the challenge of coming up with a mobile and wireless solution to extend its current e-mail system, the team decided to figuratively dig deep into its pockets to come up with a small, handheld interactive paging device that would seamlessly connect to its current Microsoft Exchange server system to provide instant connection and communication among its remote workers.

In late October, the financial services company signed an agreement with Research In Motion Ltd. (*www.rim.net*) to provide 1,500 Blackberry Exchange Edition handheld pagers as part of an initial test deployment. "We looked out into the industry to find what was available at the time," says Marc Palumbo, Head of Emerging Technology for the company's Technology Group based in New York. "We went through a couple different paths, looked at a couple different technologies, and we landed on the Blackberry."

The company just wrapped up an initial pilot program to test the wireless devices in the field, and the Blackberry units performed without a hitch. The devices are now the corporate standard for advanced messaging within Merrill Lynch, as the company continues to deploy them into organizational pockets companywide. The test "was very positive and we've since rolled out a very formal process," says Palumbo.

Blackberry Bears Wireless Fruit

Merrill Lynch had begun the search for a very mobile wireless device months before, trying a variety of small, handheld devices. But the Blackberry technology offered an economical and — more important — secure method of accessing corporate e-mail, maintaining contacts and performing other PIM functions.

WS Communications Inc., an authorized Blackberry solution provider, worked closely with the Waterloo, Ontario-based RIM to install and deploy the wireless beta solution at Merrill Lynch. Included in the "push" solutions package were the integrated e-mail/organizer software, PC docking cradle, desktop and server software, single mailbox integration and a flat-rate nationwide airtime fee.

The financial services firm isn't the only one that thinks Blackberry will bear fruit as a significant addition to a wireless network. In January, RIM announced it had signed an agreement with Intel Corp. to supply over the next three months more than 2,000 Blackberry units and multiple servers to Intel Corp. as part of a planned nationwide wireless e-mail deployment.

One key feature that attracted Intel to Blackberry — aside from the system's extreme portability and compatibility with its current IT systems — is the built-in triple DES encryption technology, an Intel spokesman said. The company has spent months testing the unit in all conditions and settled on it as a viable communications alternative for mobile workers.

The Blackberry features an embedded Intel architecture with a low-power 32-bit Intel 386 processor at its core, 2M bytes of Intel Flash memory, an integrated wireless modem, a full keyboard and e-mail/organizer software. It's designed to be wearable and operates 24 hours a day for several weeks on a single AA battery.

Pushing In Second Phase

As the second phase of Blackberry gets into full swing, Merrill Lynch is looking to expand its capabili-

ties by "mobile-enabling" different groups located within the company, such as the help desk and support facilities. Merrill Lynch also continues to work with solutions provider WF Communications to inject features into the system that will provide "push news" as well as the ability to access stock quotes and financial data — features near and dear to the heart of a financial services giant like Merrill Lynch.

Like any other IT division in a large organization, the Merrill Lynch shop is constantly under the gun to reduce costs and stretch resources while implementing newer technologies. Fortunately, Blackberry manages this task by its very nature. The units are given to employees within the company who mainly use e-mail as part of their daily business. As a result, the company doesn't have to buy a more expensive notebook computer that will ultimately be used as an electronic mailbox of sorts. These mobile workers also don't have to waste time logging on to an ISP or virtual private network (VPN) because the Blackberry is always on and ready to go.

"It's a small computer, and they can be in constant communication no matter where they are in the country at any time of the day," explains Palumbo. "So, I think it allows people to be better positioned in the loop and to know what is going on."

Of course, the road wasn't completely smooth. For example, since the Blackberry is a fairly new device and Merrill Lynch one of the first to shoot for wide-scale deployment, RIM was still developing software as the test unfolded. There were also concerns about tapping in to Microsoft Exchange, which is Merrill Lynch's primary communications technology. In the early test stages, RIM didn't have an Exchange Server product that allowed the units to operate from a server and not individual host PCs. RIM has since introduced such a product and IT is quickly discovering the benefits of an always-on type of e-mail device.

"With a cutting-edge tool like this, you know there

were certain hiccups," admits Palumbo. "Since then, we have definitely addressed and tackled some of the things I know they're still working on. It's a solid enough product for us now since we've rolled it out."

Wireless Slings and Arrows

One of the real benefits of deploying Blackberry, from an IT perspective, is that it easily expands the return on investment for Microsoft Exchange companywide. "It plugs us right into it," says Palumbo. "All of a sudden, everything you've got is mobile."

Like any pioneer, however, Merrill Lynch is wary of the arrows that might land in its back as it commits to a particular wireless technology. Since completing its initial test of the Blackberry and entering a second phase, Microsoft has entered into agreements with mobile phone manufacturers, announced the introduction of a Mobile Explorer browser and given a half-hearted endorsement to the WAP movement. All of this and more signals some significant changes in store for the wireless appliance market. However, Merrill Lynch's Palumbo doesn't seem to be worried by this industry static.

While the company has accepted Blackberry as the current technology du jour, it isn't saying it is the standard for the next five years. "That's just 'idiot mode,'" quips Palumbo. The company does believe Blackberry is the solution for now since it has a significant and bottom-line impact on different areas of the company and provides a very real productivity boost. This scenario may change dramatically, however, in 18 or even 12 months.

"I think we're really starting to see an emphasis put on this as wireless becomes the new big thing, the next buzz, the next craze," says Palumbo. "I think we're going to see more and more people realizing what the true power of wireless is, and that it is actually here now. So, you'll start to see more and more things that are wireless-enabled." ▶

COMPUTERWORLD

features that increase its Web-enabling capabilities.

Other improvements planned for the current Windows-powered OS technology include development of ClearType, which dramatically improves the on-screen legibility of characters, and enhancements to its digital voice technology — especially the voice-recognition algorithms contained in the operating systems embedded in smart phones.

With Version 2.2, which was unveiled a year ago, Microsoft also corrected many of the oversights in its earlier software, which was for the most part considered more a technical demonstration than an actual product. Improvements included the following:

- Improved screen readability with color capability.
- Improved audio capabilities.
- Support for CompactFlash devices.
- The addition of Pocket Outlook, which acts as a companion to Microsoft's Outlook messaging and collaboration client or Schedule + on the desktop.
- Improved applications, including Calendar, Contacts, Tasks and Inbox.
- A NoteTaker application that lets users capture information through handwriting recognition or a soft keyboard and then synchronizes with Word on the desktop.
- An improved Voice Recorder application that allows recording of spoken notes as well as playback of some types of audio files.
- A Mobile Channels application that allows browsing Web content off-line.

The software also borrows some tricks from pager and cellular phone technology, such as a silent vibration alert mode that can signal a user of calendar notations and be adapted to alert for incoming e-mail when the Windows-powered device is supplemented with a wireless modem.

Handheld systems from Casio, Compaq Computer Corp. and Hewlett-Packard Co. are designed to take advantage of Windows-powered features by offering color displays, faster processors (from 80 to 131 MHz) and rechargeable lithium-ion batteries. These features set the systems apart from earlier versions that had maximum 40-MHz processors, hard-to-read monochrome displays and ran on standard AA or AAA batteries.

Microsoft plans to grow the Windows-powered operating system in two directions over the next year or two with planned upgrades. One of the first will be the introduction of an enhanced version of the Windows-powered OS called "Pocket PC" and previously code-named "Rapier." While it will have its roots in the Win CE environment, this OS will be geared more toward consumer applications like electronic books (the OS will be equipped with Microsoft's ClearType technology for improved screen legibility) and digital music (supporting both Microsoft's Windows Media Player and the more established MP3 formats).

Microsoft is also working to inject more desktoplike features into the Windows-powered environment and offer a variety of scaled-down versions of its popular applications like Microsoft Money. Plans are to adapt the software with more browser-like functions. However, it isn't yet clear if Microsoft intends to offer Money as a ROM upgrade or sell it as a stand-alone application. This upgrade is scheduled to be available in the first or second quarter this year.

Subsequent upgrades, including one code-named "Cedar," will offer a host of new features for both embed-

ded systems and consumer devices such as smart phones. These include a new kernel with real-time support; improvements to the file system; and support for SNMP, FireWire and universal plug and play, as well as support for HTTP server components. Most of these features will target remotely managing Internet-connected embedded devices. Improvements to the file system include an increase in the object store size from 16M to 256M bytes and individual file sizes up to 32M bytes, sources say.

These more enterprise-targeted versions of the OS will compete with Sun Microsystems' Embedded Java as well as real-time operating systems, such as that offered by Wind River. They are also expected to incorporate improved Microsoft Message Queuing (MSMQ) support for distributed applications and enhanced TAPI support for incoming calls, useful for developers of Windows-based personal communication devices.

Wireless Communications Is the "Killer App"

More than ever before, handheld systems development and the evolution of the Palm OS and Windows-powered operating environments are being driven by applications and not just technology. The handheld systems market has yet to explode because it has been a technology in search of solid applications. The majority of current applications for both the Palm and Windows-powered OS are also designed as anchored software, meaning they can be used on handheld devices and interact with host PCs and remote systems via docking devices. Their very nature belies the whole concept of a portable and pocketable computer.

This situation is changing rapidly, however, due to the emergence of wireless communications technologies and applications designed to tap in to such things as news databases and remote e-mail systems without using docking cradles or synchronization cables. Reports indicate that the worldwide wireless market will grow from $582 million this year to $1.2 billion by 2000. This is a strong incentive for handheld manufacturers and applications providers to investigate wireless technologies.
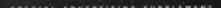
One company, Merrill Lynch, has jumped on the wireless bandwagon early and is currently reaping the rewards of providing employees with a wireless connection back to the office (see Case Study, page 10).

A major stumbling block in wireless today is the multitude of different and often competing communications standards, which is counterproductive when it comes to building and creating a strong base of wireless-centric applications. Changes are in the wind, though. Last year, both Microsoft and 3Com's Palm Computing division announced support of the Wireless Application Protocol (WAP), a specification for sending and reading Internet content and messages on wireless devices.

Microsoft plans to incorporate the protocol in Wireless Knowledge, a venture with Qualcomm, while Palm will license Phone.com's WAP-compatible browser and redistribute it to licensees of its Palm software.

A number of phone manufacturers — including Nokia, Ericsson and Motorola — have banded together with Microsoft and Palm to establish the WAP Forum, an industry group that is working to define a wireless application standard for service providers, software developers and content providers. Products supporting the standard are

beginning to enter the market, and by the middle of next year, most major handset manufacturers will have a line of WAP-enabled mobile phones.

3Com's Palm devices and other limited handheld devices may ultimately evolve to become portable limited-area terminals that can be used to tap in to a corporate database or information resource. For example, executives might use such devices while sitting in a meeting to access the latest sales data or plug in to their company's accounts receivable modules. They may also be used with developing executive portal technologies — from such companies as NetBalance Inc. and Lawson Software Inc. — to provide mobile views of customized personal Web pages with Java-enabled applications that can be used to dig down into corporate data.

And there is the possibility of melding wireless technology with specific vertical technologies. Symbol Technologies Inc., for example, has successfully parlayed the popular Palm III into a communications-centric device — mainly by taking a strong communications and applications approach. The firm previously developed one- and two-dimensional bar-code scanning products that use laser technology to read data encoded in bar-code symbols.

Last May, Symbol introduced the SPT 1700 family of rugged and pocket-size computers with advanced wireless LAN communications, Web browsing and integrated scanning capabilities. They are based on 3Com's Palm III architecture and let users communicate in real time over Symbol's Spectrum24 wireless LAN to manage schedules, personal information, contacts and e-mail. The SPT 1700 product family can withstand 4-foot drops to concrete and is water and dust resistant.

Internet Portals on Handhelds

Handheld systems and software are also expected to play a major role in the evolving area of Internet portals. In fact, it isn't unreasonable to think that portal technology will eventually be built into handheld operating systems. Portable devices with wireless capabilities and relatively large viewing screens can be used by executives to create multiwindow views into a company's activities, pulling together real-time stock prices, sales data and other information. Executives can then use these views to make quick and mobile decisions.

At least one company, NetBalance Inc., has already developed a product called CIO Portal designed for use on desktop PCs, but can easily be adapted to a Windows-powered or other device.

Sun Microsystems announced in May that it would license 3Com's HotSync data synchronization technology and incorporate it into its own Java code so that Palm users can synchronize calendar and mail applications with Sun's workstations. Sun officials said a software patch for its Solaris operating systems could be available for download within a year.

Sun has developed software designed to simplify the process of tapping in to a corporate computer network outside the office. Called i-Planet, the software provides secure access to corporate e-mail and other data using standard Internet-based connections. The software operates on a server system based at the host company and can service as many as 100 mobile devices, such as Internet-enabled cellular phones and Windows-powered notebook and handheld devices. ▶

NEWSOPINION

meeting spaces for teams, sessions by invitation, company suites, a conference packet and more. All activities can take place online. IBM also used regional conference calls.

The knowledge gained and processes recorded during such sessions are valuable assets. The information can be used as a starting point for further conversations and additional development or distributed and reused elsewhere in the company.

The ability to capture and reuse company knowledge is one aspect of "digital capital" — the new form of wealth that distinguishes winners from losers in the digital economy. Companies can no longer afford to wait for semiannual, quarterly or even monthly meetings to share insights within a team. The pace of business is just too fast. Companies are increasingly relying on the intellectual synergies that flow from employee discussions and collaboration.

The Web provides an increasingly valuable platform for building ongoing dialogues within the company as well as among companies, their suppliers and their customers. ❯

JOHN GANTZ

Controlling the coming chaos of intranets

I WAS JUST DIGGING through the data from International Data Corp.'s annual survey of technology adoption and found a mind-boggling statistic on intranet adoption that should set off alarm bells in the IT community.

Internet access is already a done deal.

More than half of the employees at small, medium and large businesses had access by the end of last year, and three quarters will have it by the end of this year. Making the Internet available to workers isn't all that tough. A few high-speed lines, a firewall or two and browser downloads to the desktop, and you're done.

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But intranets are something else. They require management, design, authoring and hosting — all the toil associated with an external Web site but for nonpaying customers. According to the survey, the percentage of employees accessing intranets will jump from 18% last December to 69% next December. That means more than half the workforce will get intranet access within 12 months. This isn't a migration — it's a stampede!

For those of you who are in the middle of this stampede, here are some of the headaches you can expect:

■ **High expectations and low budgets.** Few CEOs will fund intranets as they would their Internet Web sites, yet employees who are used to sites such as Amazon.com or eTrade.com will be looking for the same performance, navigation and search tools, personalization, hot links and the like in their companies' internal Web sites.

■ **Site design will become a political football.** Who decides what goes into the intranet? Which departments control which areas? How will a corporate look and feel be maintained?

The two customary solutions — one corporate standard or each department develops its own — are incompatible. Yes, we can deploy intranets of intranets (like those at Microsoft and Boeing), but try getting search tools and navigation bars to work across them. And don't forget registration, security and analysis tools.

■ **Authoring will be a huge bottleneck.** Unless every employee can post to the intranet, someone will have to play editor or traffic cop. Who will be the gatekeeper? If every employee can post his or her own content, how will it fit into a larger structure? Who will pay for the extra tools and design skills to make that happen?

As this chaos spreads among end users, CEOs will more often than not turn to IT departments to fix the mess.

My advice?

■ Hack away at users' expectations at every opportunity. Make sure they realize that Version 1.0 of their intranet will be rudimentary. A charge-back system might help get this idea across.

■ Create a site design that has a corporate shell around spaces that are set aside for user-generated content that's created through a common authoring package. This will provide some sort of integrity to the overall design but will give end users some site control.

■ Develop a resource center to help user departments create that content. Resources can include training courses, best practices examples, templates and consultant directories.

■ Partner with some key, high-profile end-user departments on their projects. Bend over backward to make them successful. This way, you'll be seen as supporting your company's intranet adoption without being controlling. Since you won't be able to control it anyway, you may as well get some good public relations from your cleanup work. ❯

READERS' LETTERS

Reverse split could hurt stock options

E RIK SHERMAN'S article "Stock Options: The Ugly Truth" [Business, Jan. 24] missed one of the other ways to lose the value of pre-IPO options. If your start-up stalls after a couple of years, it may require a second or third round of funding, which injects new money into the company but dilutes the value of the options. One IPO how-to book described this in a chapter titled "The Inevitable Reverse Split."

What is a reverse split? Whereas a public company's stock may rise enough to allow a positive 2-for-1 split, a pre-IPO start-up may dilute its value enough to require a 1-for-10 or 1-for-20 reverse split. I know — I have had the misfortune of working at two start-ups where my blocks of options went through 1-for-20 reverse splits. In one case, a modest block of 10,000 options shrank overnight to a trivial 500 options, and in the other, my wonderful block of 70,000 options turned into 3,500 options. At that point, many of the employees looked at each other and said, "It's just a job now."

Bottom line: If your start-up is stalled or trying to expand, causing the board to seek another round, a reverse split is likely to happen. It might be a good time to ask specifically if a reverse split is coming and what the ratio might be. Then you will know what those "handcuffs" might be worth.
David Kemp
Dallas

The wheel? Wish I thought of that

I WAS PART OF a research team in 1978-79 that developed the packing technique for a subdivision of Dun & Bradstreet, using EBCDIC on an IBM System 370 mainframe.

Of course, since patents are good only for 17 years, ours would have most likely been expired by the time Tom Soeder made his application ["Y2k Patent Owner Still Wants Fees," News, Feb. 21]. Therefore, it would appear that neither he nor Bruce Dickens possesses anything truly unique enough to warrant the issuance of a patent.

How could the U.S. Patent Office allow something like this to occur? I think I'll submit an application to get a patent on something called a wheel (I'll bet the original patent has expired by now).
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Hiring managers get what they pay for

I WORK IN A temporary IT staffing firm ["Anyone Need a Consultant?" Business, Jan. 31]. Every day, we receive notices of openings from managers who need to hire candidates to finish projects or meet deadlines. They are looking for the hardest-to-find skills, with no intention of buying them. They have projects that will put them ahead of their competitors, but they never finish them because they don't want to spend money.

They end up settling for the lowest-paid consultants, then they come back and complain two months later that the consultant has managed to mess up the whole project.
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The top performers in the FORTUNE® Global 500 use Teradata™ from NCR.
Do they see something you don't?

MICHAEL COHN

The greatest of unheralded tech inventions

THANK GOODNESS it's a new century. I was rather rapidly getting sick of the last one. Sick of all the talk about the greatest athlete of the 20th century. The greatest moment. The greatest invention.

For starters, no one even asked me. But if they had, my candidate for innovation of the century would be home-delivered pizza; either that or the Slinky, even though I still can't figure out how it goes down a flight of stairs.

But conspicuously absent from these conversations are computers. No one even talks about the century's greatest computer inventions.

MICHAEL COHN is a consultant in Atlanta and still insists that Beta videotapes were the greatest thing since sliced bread. Contact him at mdyinc@aol.com.

Sure, Microsoft's Bill Gates gets a little hoopla. And Amazon.com founder and CEO Jeff Bezos made the cover of a magazine or two.

But there are dozens of unheralded innovations that sadly go unnoticed. Here are just a few of the greatest innovations in data processing that somehow slipped through the cracks of recognition.

■ **The @.** It's mind-boggling: This one tiny keystroke launched the Internet. Though if I had a vote, I'd much rather have gone with the ^, which is a heck of a lot easier to draw. But thank goodness we didn't go with the -, since I still pretty much use the IBM PC Jr. that I bought back in '85, and it doesn't have that symbol.

■ **The raised floor.** Maybe the greatest invention of all time, yet we take it for granted. Without it, life would be nothing but piles of wire and cable snakes. Raise a glass to the raised floor — it's literally the foundation of technology! It has brought order to a world of chaos.

But there looms a sad day on the horizon when smaller machines and wireless technologies will make the raised floor go away forever. I'd like to be there the day they rip up ours. Lord knows what we'll find under there — maybe that operator who disappeared from second shift back in 1987.

■ **The ultralight notebook.** This may not seem like a big deal, except to those who lug laptops, batteries, cables, attachments and accessories through airports every week. I can add 2 inches onto my arm just schlepping the stuff between gates.

Thank goodness the late '90s brought about new, lighter notebooks. I had one that was so compact I could put it into a glove compartment — which I moronically did recently in a rented car in Chicago and haven't seen it since.

■ **Voice mail.** No more endless rings. No more little pink "While You Were Out" pads. Calls are answered around the clock, securely, reliably and privately. Voice mail was arguably the greatest productivity enabler of the century, except on those days when you pop downstairs for frozen yogurt, come back and find out you've got 16 more messages.

■ **Halon.** Brilliant! It once was the fire suppressant of choice in every computer room in America, until a few cranky envirosafety geeks started to make noise. It was the perfect way to stop a blaze — kill the flame, save the equipment. All right, it did have a downside: With a little bad luck, it could wipe out every living thing in the computer room. But heck, I knew a headhunter who did the same thing to a small data processing department in New Jersey. ▶

BILL LABERIS

How to mismanage relationships with your customers

TODAY, COMPANIES have computing resources available to customize the delivery of services on a phenomenally personalized level. This capability is brought to us by a combination of very reliable and fast networks, network storage technology, ultra-high-speed processors and superb data analysis tools. Using such resources properly, a company can cater to the individual needs of thousands, if not millions, of customers, even for commodity items.

So it's not surprising that companies are seizing upon customer relationship initiatives. International Data Corp. (IDC) says that the $49 billion companies will spend on customer relationship management (CRM) services this year will swell to nearly $90 billion in just three years.

But I wonder: Are many CRM initiatives already missing the mark, focusing more on attracting new customers (i.e., pumping up revenue) than on retaining existing customers, which is the real payoff from CRM?

BILL LABERIS is a consultant in Holliston, Mass., and former editor in chief of *Computerworld.* Contact him at bill@laberis.com.

Permit me one example to illustrate my point. It comes from the airline industry, which I would wager each of you has loved to hate at least once in your professional life.

I stood up to deplane from a recent flight, which was more than two hours late because of a combination of alleged weather-related problems (our destination had very light rain) and the quintessential "equipment problems" (in this case, the jetway was stuck). As I tried to enter the aisle, an elderly couple who had forced their way in front of me blocked my path. Assuming they were just being rude, I barked out a choice comment.

But a young woman seated next to the couple intervened, saying that the couple had been victims of two previously cancelled flights by the same major carrier, and they were trying to find their connection to Puerto Rico for their first-in-a-lifetime winter vacation. It was nearly 10 p.m., and, obviously, there would be no rum and Coke for them that night.

I followed them out to the gate area. They clearly were not flying veterans and were struggling with the English language. They were totally perplexed. No one was there to greet them.

The gate counters were unoccupied at that late hour. The flight attendants were either oblivious to the couple's plight or just didn't care. I directed them to a counter that was staffed by a lone attendant and left them at the mercy of one of the most computer-intensive organizations on earth.

There's no way that the airline wasn't acutely aware of the couple's situation. All the data on their travel misfortunes was in the airline's gargantuan databases, probably in several places. Yet no provisions had been made in advance to accommodate these truly lost individuals.

And for this, organizations are going to be spending $90 billion annually by 2003? Consider the wealth of data that airlines have on customers, particularly its frequent fliers like many of you. Now consider the utter lack of anything approaching personal service from the airlines. I know I get none. Why is that?

Is it that despite the hype about CRM, the real efforts in business are still focused on cost-cutting and sales generation, far above all else?

Included in IDC's definition of CRM services is "building customer care processes that help companies . . . expand relationships with customers . . . to improve the customer experience." Explain that to our wayward elderly couple. As CRM's architects, IT management can and should play a role not just in implementing CRM technologies, but also in having a say in targeting their outcomes.

I'll bet there are many other companies and industries that, while professing to embrace CRM, actually fall far short of its promise in actual practice, just like the airlines. And I'll bet you know who they are and why they fail to live up to the hype.

Please write me with your CRM horror stories, and I will revisit this topic with more information in the future. ▶

READERS' LETTERS

Solutions, responsibility in question after denial-of-service attacks on Web sites

TEN POUNDS of frustration in a 5-pound bag — just ask any network guy. I'm talking about the one-step solution for denial-of-service attacks.

The problem, of course, is that the one step has to be undertaken by thousands of people.

As I wrote in a rant on my Web log just before reading this week's *Linux Weekly News*, the problem here is that engineering, which knows how to stop these problems — and has since well before they started becoming big problems, can't get the support of management to spend the time and money necessary to solve the problem. Perhaps that will change now.

The largest component of the problem is that the sources of the attack can't be traced. Never mind the perpetrator — you can't even find the compromised sites actually sending the packets. Why? Because their source addresses are forged.

For a couple of years now, routers and dial-up terminal servers have had the facility (we call it a knob in the router biz) to drop incoming packets that have impossible source addresses in their headers. *All you have to do is turn it on.*

Had this been done before now on every router and terminal server where an untrusted machine is connected, the recent events very likely wouldn't have happened at all.

Yes, there are a lot of unprotected systems that need to get tightened up, quickly, but . . .

With valid source addresses, target routers could have been quickly filtered to drop incoming trace packets while the source was traced, and *that* router's operator notified to find and quash the source.

But that knob was *never* turned.

I have archived mail on a major network operations mailing list going back two years on this topic. But everyone has to do it. If your downstreams won't take this precautionary measure, *you have to cut them off until they*

do. That's the only thing that will fix this.

But no one does it. "There's too much money involved to shut them down for something this trivial," the suits say.

Yeah, right. Ask eBay.

Jay R. Ashworth
Ashworth & Associates
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THE RESPONSIBILITY for the recent denial-of-service (DOS) attacks seen on the Internet has been primarily attributed to the originating perpetrators and the e-commerce victims. However, there are third-party participants that should shoulder a large portion of the blame: the access and backbone Internet service providers (ISP) and the unsuspecting third parties whose systems are being used as launchpads for DOS attacks.

Many ISPs are doing very little to proactively detect or thwart DOS attacks beyond rerouting, even though they are stakeholders in these events and have risks similar to those shared by the targeted victims. At a high level, the risks are loss of bandwidth, router failure and impact on nontargeted ISP customers.

If ISPs are truly interested in providing the best service possible, they should be contractually willing to recognize and stop DOS attacks before their customers are severely impacted. Conversely, e-commerce customers should include service-level agreement language in all new ISP contracts, that penalizes the ISP if it takes too long to respond to a DOS attack.

What can be done about unsuspecting third parties, whose systems have been used to launch DOS attacks? Many foster "open computing environments," so they should then be "open" to the financial liabilities if they play supporting roles in such attacks.

Finally, for those who are connected to the Internet without firewalls, whether due to ignorance or some economic reason, it's time to seek help from our lawmakers. Laws need to be enacted requiring

all dedicated Internet connections to have at least a minimal set of security standards in place. There's no excuse for a business, hospital, institution or college to be connected to the Internet without firewall protection in place. To make matters worse, most of these networks are connected in some manner to our nation's critical infrastructure.

Michael D. Tonick, CISSP
Senior security consultant
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A NOTE and a request regarding a popular terminology:

The media have often referred to *cyberterrorists*, linking them to denial-of-service attacks. I suggest that this moniker:

■ Is useful for funding security projects and getting viewers and click-throughs.

■ Tends to engender needless fear in the public, as with the Y2k fiasco.

■ Is etymologically incorrect.

In February 2000, a denial-of-service attack is relatively simple to put together. It's about as difficult as it was to put together a party to go spray paint subway cars in the late '60s. Its effects are more parallel to such vandalism (or art) than to terrorism in that it may annoy some, amuse others and cost yet others some money to repair.

Don't misunderstand, I consider such acts to be pointlessly vile, antisocial to sociopathic. But they aren't "terrorism." I suggest that the trade press and security professionals use the term *cybervandalism* for such acts and *cyberpunk* for the perpetrators. Not only would these be neologisms that are more in line with their etymological precedents, but they would serve to clearly

dismiss the pettiness of the acts, which would prevent glorification of the perpetrators.

Of course there may be *cyberterrorists*, ones who might cause failures in life-support systems or transportation systems that would lead to pain, suffering and wrongful death. A denial-of-service attack on Yahoo doesn't qualify.

If we aren't to reproduce our collective professional dismal failures in addressing both the growth of computer viruses and the more recent Y2k miasma, we need to have a public that's aware of the issues and effects and doesn't react solely to the most semantically loaded terms the marketing arms of the software security industry can come up with.

Cyberterrorist should be out for the Yahoo kind of incident, as *cyberpunk* is more to the point.

James Nickson
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Despite errors, more coverage of BSD system wanted

AS MUCH AS it pleases me to see more coverage of BSD technology on your Web site, I am nonetheless compelled to correct a number of significant inaccuracies in the article ["Three Unixlike Systems May Be Better Than Linux," Opinion, Feb. 7].

First, NetBSD isn't the only free Unix to offer IPv6 support. Not only is this support widely available in the Linux community, but FreeBSD and OpenBSD bundle it as well. FreeBSD 4.0, currently available in beta, is also fully IPv6/IPSec capable "out of the box" and doesn't require the additional step of installing the KAME modifications.

Second, FreeBSD was never a part of the NetBSD group and didn't "splinter" from them. Both groups started around the same time in an independent fashion, and if any "splintering" went on at all, it was from both groups leaving the defunct 386BSD project in the early '90s.

Third, as much as I would like to be able to claim "automatic memory allocation" as some sort of FreeBSD innovation, I'm afraid that IBM and others were there first, way

SIMSON L. GARFINKEL

Three Unixlike systems may be better than Linux

BEFORE YOU deploy Linux within your organization, you should look beyond the hype and consider other Unixlike operating systems. Like Linux, these systems can be deployed without paying licensing fees. And like Linux, they are open source. But in many cases, these other Unixlike systems deliver better performance, more security and other features that today's Linux offerings still can't touch.

These other Unix systems are descended from Berkeley Software Distribution and were originally developed by the University of California at Berkeley's Computer Science Research Group. The three systems — FreeBSD, NetBSD and OpenBSD — have strong followings among Unix insiders for their performance, reliability and security.

To be fair, the differences between the BSD systems and Linux are minor compared with the differences between these systems and Windows NT. All of the Unix systems use the same graphical user interface based on the X Windows System. They all have the ability to share files and printers to Windows 95/98/NT desktops using

back in the 1960s. Perhaps Mr. Garfinkel is referring to FreeBSD's fully merged VM system and buffer cache? That is indeed one of its unique features, but I'm not sure one could conceivably describe it in the words he used.

Again, I am more than happy to see this kind of coverage in your news features and cer-

tainly don't want to discourage Mr. Garfinkel or anyone else from writing about such material. I merely wished to correct some statements.

Jordan K. Hubbard
Co-founder/Release Engineer
The FreeBSD Project
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THE ARTICLE that Mr. Simson L. Garfinkel wrote is inaccurate and doesn't reflect the truth about Linux and the BSDs.

Even the BSD people know that they have real problems in trying to catch up with Linux.

The 2.3 development version of the Linux kernel is far more powerful than the FreeBSD 4.0 in every aspect, and FreeBSD is the more functional BSD. I think every operating system has its strengths. Just as with OpenBSD, whose strength is security, I don't think Linux is real insecure, as [Garfinkel] described it. (I administer 200 Linux boxes at a university.)

I don't have anything against BSD — I use it in my Web server and many other servers. But this article is very inaccurate.

Otto E. Solares
solca@fisicc-ufm.edu

What do **you** want
the Internet to be?℠

The New
Internet

Hey, if it's peace of mind you're after, Tim, we've got you covered. We're building the new,
high-performance Internet. Paving the way for high-quality, reliable and open
solutions that enable networks to perform as never before. Which should
put most everybody's mind at ease. Take the Microsoft® Windows® 2000 operating system.
It integrates Nortel Networks™ Open IP Environment routing software. And for Windows
2000 users, that means Internet Zen. So come together, right now with Nortel
Networks. And make the Internet whatever you want it to be. **nortelnetworks.com**

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BUSINESS

WEAK EXCHANGE

The dirty little secret of business-to-business exchanges is that they're as cutting edge as a steno book. But some exchanges are trying to change that by building links to inventory and enterprise resource planning (ERP) systems to help automate data exchanges that are now done manually. ▸ **42**

ONLINE RADIO

Amazon.com and Borders.com both offer 30-second music samples free online. Now Barnesandnoble.com is upping the ante with full-length versions of 25,000 songs and five-minute chunks of books on tape. With the number of online radio listeners growing by leaps and bounds, analysts say the enhancement is enticing a receptive group of consumers. ▸ **44**

SAP AS ASP

ERP applications are among the most demanding and popular software packages that application service providers (ASP) offer. Now SAP is leaping into the business, offering a hosting service as well as software. ▸ **44**

PRODUCT INFO

SAP has enhanced and Web-enabled the software it developed to help users track product features and manufacturing details. The new versions can also tie into business planning applications to help collect data on parts — both internally and from suppliers. ▸ **46**

STAFF SURPRISE

IT managers who plan their budgets with the assumption that staff salaries and other personnel costs will continue to rise may be in for a rude surprise, Paul A. Strassmann warns. Senior executives will eventually bring down the curtain on rising IT staffing costs. ▸ **48**

LIFE AT AN ASP
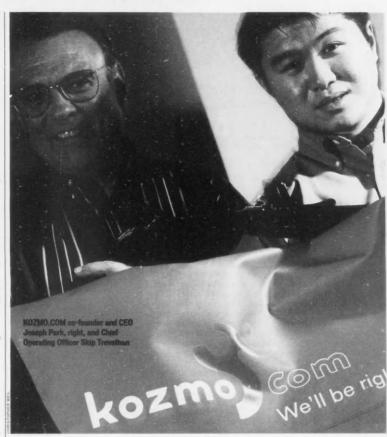
What's it like to work at a just-gone-public ASP whose clients include high-end investment bankers? Intense but interesting. There's lots of variety, but you're always serving two masters: external clients and users in internal departments. ▸ **48**

DRAG RACE

Ford and General Motors are extending their neck-and-neck competition to the Web, where consumers have taken control of the buying process. Who's winning? Maybe Ford, but will both automakers smash into a wall built by dealers trying to hang on to their business? ▸ **50**

GREAT GIG: CONSULTING

The Web has transformed consulting companies more than any other type of business. They're hiring furiously and spinning off e-commerce practices to try to meet demand. That means almost unparalleled job opportunities for consultants who have just the right combination of skills and experience. ▸ **58**

KOZMO.COM co-founder and CEO Joseph Park, right, and Chief Operating Officer Skip Trevathan

SIMPLE IDEA, COMPLEX IT

FREE DELIVERY ISN'T THAT COMPLICATED if you're a pizza place. But if you're Kozmo.com and you promise to deliver a range of food and other stuff within an hour after an order's placed on your site, it's — well — a little tougher. Between the click-to-order and the knock on the door are high-end servers, bulked-up networks and an army of IT people keeping the whole operation online around the clock.

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B-to-B Exchanges Tighten Buyer/Seller Data Links

Focus on growth, not integration, left suppliers rekeying inventory data by hand

BY JULIA KING

IN THEIR BIG RUSH to be first to market, digital exchanges have paid little attention to helping their users integrate online transactions with legacy computing systems.

Instead, most exchanges and digital marketplaces have been laser-focused on building liquidity by increasing the number of transactions that flow through the site — even though the buyers and sellers they connect might be entering and tracking data by hand.

"Right now, all of the entries are manual and labor-intensive," said Adam Braunstein, an analyst at Robert Francis Group in Boston.

Put another way, "The marketplaces are vaporware right now [because] none of the suppliers are connected," said Bruce Bond, an analyst at Gartner Group Inc. in Cambridge, Mass.

But there are signs that the focus is beginning to change.

Streamlined Steel Production

New York-based e-Steel Corp. is a prime example. The company recently announced technology that significantly streamlines the work required for steel producers to post inventory to the site.

Using a homegrown XML translation technology called DataJet, which e-Steel built with the help of vendors, steel producers can upload flat files describing thousands of inventory items to e-Steel. The tool converts the data automatically, posting the seller's inventory on the digital exchange quickly and in a format that's immediately searchable by buyers.

Until now, steel producers — each of which have unique data formats, protocols and product descriptions — had to manually convert that information to e-Steel's inventory format.

"The real value from an exchange comes from taking a transaction full circle, from the exchange back to an [enterprise resource planning] system" at the seller's sites, said Tom Costello, chief technology officer at e-Steel.

"Right now, we're in building block mode. We've put the technology in place to mass upload to the exchange. Now we need to communicate with back-end ERP systems."

E-Steel is working with Computer Sciences Corp. in El Segundo, Calif., and webMethods Inc., which makes XML-application integration software, to develop ways to plug into ERP systems. The three plan to create a standard industry protocol for electronically sharing data called the Steel Markup Language.

Other exchanges also are using outsiders to develop integration functions.

RightFreight.com, an online marketplace for transportation companies, and Need2Buy.com in the electronic components industry are using Extricity Software Inc.'s XML-based technology to eliminate manual re-entry of data on a trader's end.

"Integration is the new sticky aspect of a company's offering. By integrating systems, you become partners," said Lane Butler, vice president of marketing at RightFreight.com. "The first generation of digital exchanges were transaction-based. But going forward, they'll be relationship-based."

"We're definitely starting to see Net markets make headway on [back-end] integration," but that's just a baby step, said Bond. Manufacturers and suppliers will use the online marketplaces to exchange not only orders, inventory and transaction data, but also product design and other data on which they collaborate, he predicted.

"Today, it's all about business transactions. But in the future, it will be about sharing information and collaboration," Bond said. "Manufacturers and suppliers won't just have contracts for buying [on the exchanges]. They'll use them to design products together." ▶

E-STEEL CORP. recently announced technology that streamlines the work required for producers to post inventory to its site

Integration Improvements

According to Forrester Research Inc. in Cambridge, Mass., users can expect to see additional integration features from digital exchanges in the next two years. They include the following:

■ Seamless integration to third-party providers of shipping, logistics, credit and other services.

■ Hands-off transactions governed by preset criteria. One example is that a company's enterprise system would automatically post to the exchange any inventory that has remained untouched in its warehouse for longer than 10 days. On the other end, an exchange might pull a product from its site once the price goes below a point preset by the seller.

■ Customized sales, customer service and other performance reports based on return on investment parameters set by each company. – *Julia King*

Investors Are Wary of Handheld Trading

Brokers push wireless service users don't want

BY MARIA TROMBLY

However hot the stock market is, investors aren't yet ready to adopt the wireless, handheld trading devices some brokers are pushing, analysts said.

Some online brokers, such as Boston-based Fidelity Investments, offer access to online trading accounts through two-way pagers and the Palm VII organizer from Santa Clara, Calif.-based Palm Inc.

"Right now, it's some quotes, news and trading capability," said Dan Burke, an analyst at Gomez Advisors Inc. in Lincoln, Mass. "I don't think the technology is generally there to show the breadth of features that a lot of the online trading sites offer."

Most of the wireless brokerage offerings appeal only to the most "hard-core" traders, agreed Shaw Lively, an analyst at International Data Corp. in Framingham, Mass.

For example, Lively said, Fidelity was able to sign up more than 30,000 customers for its wireless services — only 1% of about 3 million accounts.

Other brokerages are working to catch up.

Merrill Lynch & Co. in New York, for example, just made a deal with New York-based wireless service provider w-Trade Technologies to take the HTML content of the brokerage's investment Web sites and transform it into material that can be understood — and displayed — by a variety of wireless devices.

One of the biggest problems, in addition to the sophistication of the services available, is the devices on which they're delivered, Lively said.

The plethora of pagers, personal digital assistants (PDA) and cellular phones makes it difficult to develop a wireless product, though Lively said he expects one or two devices to dominate by the end of the year.

Frank Zammataro, vice president of online investments at Merrill Lynch's Digital Business Development Group, said more than a quarter of his customers were using pagers or PDAs a year ago. He said he expects to have a pilot wireless project ready to launch "in the next few quarters." ▶

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IBM

Retailer Launches Free Online Radio Station

Battle among booksellers for customers moves to music on-demand, other media

BY MELISSA SOLOMON

ALL TINA, all the time.

At Barnesandnoble.com Inc.'s new online radio station, which kicked off Feb. 1, Tina Turner's newest hits are among the 25,000 songs visitors can listen to at no charge.

The free radio station, said analysts, is Barnesandnoble.com's latest strategy to move ahead of the pack in the fierce battle among Internet music and bookstores.

"It only makes sense," said Rebecca Nidositko, an analyst at Forrester Research Inc. in Cambridge, Mass. "It's just another way to market a product they're selling."

The radio station, bnRadio.com, lets listeners tune into full-length music from a catalog of 25,000 songs. Like traditional stations, listeners are limited to the songs that are currently playing, but they can select the type of music they want to hear. The station offers 16 music categories including alternative, blues, country and pop. Visitors can then purchase music directly from the site.

"It's really just providing a more entertaining shopping experience," said Barnesandnoble.com spokeswoman Lisa Lanspery. "This is going to enhance our music store and continue the momentum."

Barnesandnoble.com's major competitors, Amazon.com Inc. and Borders Group Inc.'s Borders.com, let visitors sample songs for only 30 seconds. Visitors at bnRadio.com can not only listen to full-length songs, but they can also sample five-minute portions of books on tape, which normally run six to 11 hours. Customers can access Real Player 7 and Internet Explorer 5.0 or Netscape 4.7 for Macintosh computers or PCs.

It's only a matter of time before competitors catch on to the idea and offer free full-length music selections at their sites, said Nidositko.

The audiences seem to be out there. More than 850,000 Internet listeners spent 1.4 million hours last November tuned to online radio stations, according to statistics from The Arbitron Co., a media research company.

Jeremy Schwartz, a new-media analyst at Forrester, praised Barnesandnoble.com's idea, but he said it could hinder sales if people can dial in anytime and listen to music online.

Lanspery disputed that argument, pointing out that bnRadio.com is similar to traditional radio stations. The idea, she said, is to promote excitement about artists so people buy their music.

The biggest expense for Barnesandnoble.com in launching the station was the price of the tuner, explained Lanspery, who said the company won't disclose terms of the deal. But the company will easily recoup the expense by selling more music at the site, she said.

The station is licensed by Broadcast Music Inc., the American Society of Composers, Authors and Performers, the Society of European Stage Authors and Composers and performing rights companies, according to Charles Moore, a spokesman at Cambridge, Mass.-based Radio Active Media Partners, which developed the bnRadio service. Copyrights for the station were obtained by the Recording Industries Association.

While the online book sales competition is far from limited to the giants, smaller bookstores probably won't feel much of a pinch from bnRadio because it will likely attract music customers rather than book shoppers, said Dana Brigham, co-owner of Brookline Booksmith, an independent bookstore in Brookline, Mass., two blocks from a Barnes & Noble Inc. store.

"It's just another straw on the poor camel's back," said Brigham. "But this one doesn't have me truly exercised."

Many independent bookstores have launched Web sites in recent years to stay afloat. They have even banned together to create BookSense, a nationwide network of 1,100 bookstores offering merchandise on the Internet. But, said Brigham, their primary focus remains with brick-and-mortar stores.

The bigger booksellers, she said, can duke it out among themselves, with features such as online radio and TV stations.

"There's almost a crazy desperation," she said. "The number of things being added everyday is outrageous." ▶

VISITORS TO BNRADIO.COM will be able to listen to full-length songs in 16 music categories and sample books on tape

Web Radio

Web-based live radio stations can also be found at:

www.broadcast.com

www.comfm.com

www.live-radio.net

www.mediaradio.com

www.netradio.org

www.overdog.com

SAP Launches ERP Hosting Company

Matches moves of Oracle, PeopleSoft

BY CRAIG STEDMAN

After initially leaving application hosting to outsourcing and services firms, SAP AG now plans to join other enterprise resource planning (ERP) vendors by jumping directly into the hosting business.

At the CeBit trade show in Hannover, Germany, SAP said it's setting up a new company that will rent R/3 and its other business applications to users for monthly fees. That matches moves made by ERP rivals Oracle Corp. and PeopleSoft Inc.

Oracle began offering hosting services for its ERP applications last year. PeopleSoft, in Pleasanton, Calif., this week plans to announce a hosting program that it first said was in the works six months ago.

SAP's new hosting company, which has yet to be named, will operate independently of the German vendor's subsidiaries in the U.S. and other countries and be responsible for hosting-related activities from those units. It's due to open for business next month with about 50 employees.

But SAP doesn't plan to go its own way on hosting. Hartmut Engel, who will head the new company, said SAP wants to claim only about 10% of the R/3 hosting market for its applications. The rest will be left to outsourcing companies and application service providers that his unit will train and certify, Engel said.

For R/3 users who want someone to run their applications for them, SAP's foray into hosting provides the opportunity to do business with a single company, said Joshua Greenbaum, an analyst at Enterprise Applications Consulting in Berkeley, Calif.

But that can also be a two-edged sword because independent hosting firms can act as user advocates with SAP if problems arise, according to Greenbaum. And users with multiple applications may not have any choice. "SAP is not going to support an Oracle environment, period," he said. ▶

Technology *Brief*

▶ E-Business: Opportunity Today, Requirement Tomorrow

By Lynne Stockstad

THE UNPRECEDENTED power of the Internet to communicate is fundamentally changing how business is conducted. The change is known as "e-business," and today it represents a dramatic competitive advantage for those companies that either originate on the Internet as "dot.coms" or transform themselves from "bricks and mortar" to "clicks and mortar."

But soon, e-business will simply be a business requirement to thrive, if not survive, in an interconnected digital economy. A comprehensive e-business management solution that supports both the emerging computing paradigm and the transformation of business processes is critical to today's businesses.

In an e-business world, computing

Lynne Stockstad is vice president of e-business at Great Plains

is shifting from the traditional client/server model to an "anywhere, anytime, by anyone" model. Therefore, e-business solutions must support secure access through multiple appliances, including network computers, handhelds, smart phones, smart cards, televisions and PCs.

Solutions must also leverage all the computing resources on the network — including the Internet — and must enable direct business-system-to-business-system exchanges through the use of Extensible Markup Language (XML), without any required user intervention.

The e-business computing paradigm enables the transformation of business processes, revolutionizing process steps, process participants and their roles. Comprehensive e-business solutions will deliver both process transformation breadth and depth.

A "breadth" e-business management solution encompasses all key

processes within a business that can be generally grouped under the categories of Manage, Purchase, Sell and Service. In an e-business world, each category consists of content, interactions and transactions between a business and the constituents within its business community.

This community includes prospective and current employees, partners, customers, suppliers, influencers, press, analysts and shareholders. A breadth e-business management solution will transform business processes across all business community constituents.

A "depth" e-business management solution delivers end-to-end transformation within a specific business process. For example, a depth solution for the process of selling goods and services to prospective and existing customers would not only include a well-designed Web storefront, but also the seamless integration with the e-business back-office engine.

With the depth approach, changes such as item pricing, item availability, customer credit history or sales tax calculations can be seamlessly incorporated into the customer's Web shopping experience. Vendors that will emerge as leaders in e-business management solutions will need to deliver both breadth and depth business process transformation.

The delivery method for e-business solutions is also transforming radically. Within the software industry, this transformation is often thought of as a shift from "software as a product" to "software as a service." Delivering software as a service primarily affects pricing and deployment.

Under the service model, solutions are priced according to a monthly or annual subscription fee vs. an upfront lump sum and are deployed through a third-party data center host instead of the customer's internal network. Data center hosting providers, or application service providers, are building their value proposition around software as a service to dramatically reduce the expense of IT

infrastructure and personnel.

These transformations will require dramatic change in the business management solutions that enable e-business. Today, there isn't a single e-business management vendor that can provide a comprehensive solution that supports the e-business computing paradigm, transforms business processes across breadth and depth and delivers software as a service.

However, the leading, traditional enterprisewide business management vendors are best positioned to offer comprehensive e-business solutions in the near term. Why? These vendors already deliver the most complex and critical component for e-business — transaction processing — and account for the transactions as well.

Today, e-business represents an opportunity for individual businesses and business management solution vendors. Tomorrow, however, e-business will be a requirement for both to survive — and ultimately thrive — in an e-business world. ▶

Integrating Customers Into Your E-Business World

Industry experts say that the cost of gaining a new customer is six to seven times more than the cost to retain an existing customer — that's a shocking figure.

Implementing a customer relationship management (CRM) solution provides a holistic corporate view of customer relationships and data that enables companies to better address their customers' needs and concerns.

With an integrated front- and back-office solution from a single source, not only can you have greater accuracy of data without

duplication of entries, but you also can ensure consistent and successful support of the solution. This provides you with benefits across the board. Externally it allows you to improve customer value and satisfaction, get better customer response and create higher profitability. Internally it allows for a more seamless flow of information, reducing employee stress and creating a more productive work environment.

Creating and executing a successful CRM strategy will be essential for success as e-business becomes business as usual. ▶

BUSINESS

SAP Expands Product Data Management Tool

BY CRAIG STEDMAN

SAP AG last month announced the release of an expanded version of an application that lets manufacturers collect and manage databases of information about their products.

SAP joins other vendors in reinventing product data management (PDM) applications — once confined to engineering departments — as Web-based systems. They can now be used to track and update products from the development stage through manufacturing and use by customers.

For example, SAP's new Product Lifecycle Management software includes links to its business planning and product configuration applications, plus a set of Web-based tools that can be used to collaborate with customers, suppliers and contractors on product designs and engineering changes.

Saudi Arabian Oil Co. (Saudi Aramco) is one of the first to work with the new software. It plans to turn on the beefed-up PDM applications late next year as part of a wider rollout of SAP's R/3 enterprise resource planning system, said Guy Pengelly, lead designer on the logistics piece of the project.

The new product should make it easier to gather data about the equipment used in the company's refineries, Pengelly said. Currently, manufacturers send in floppy disks with information that's vital to keeping the refineries running. With the new PDM software, manufacturers will enter data directly through a Saudi Aramco Web site, he said.

Access, Security Issues
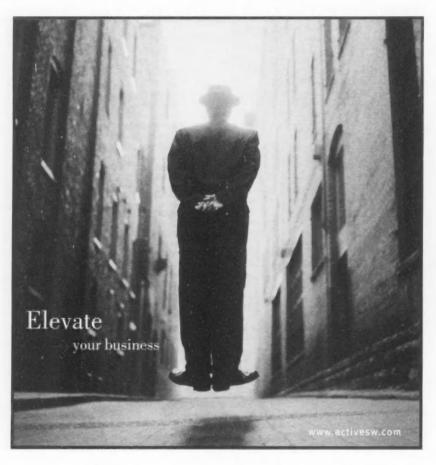
But business challenges remain. Pengelly said manufacturers are sometimes reluctant to provide all the information Saudi Aramco wants because they fear the company will buy parts directly from their subcontractors. Web-based collaboration "is a great idea, but you have to place a reality check on it, because in some sense we're competing entities," he said.

Schindler Management Ltd., a Switzerland-based maker of elevators and escalators that already uses an earlier release of SAP's PDM software, faces similar issues in planning for an upgrade to the new version that's slated for next year.

Giving suppliers unlimited access to data "is a little bit dangerous," said Edwin Ming, a senior PDM engineer at Schindler. The company still needs to work with external users to determine what kind of data they should see and how the information can be safeguarded, Ming said.

But the new software should provide benefits internally, he added. SAP's Web support will free Schindler from having to maintain a custom browser-based user interface it developed when the PDM software was installed in late 1998.

The expanded application is being beta-tested now and should be ready for shipment in May, SAP said. ▶

WORKSTYLES

What It's Like to Work at ...
ReSourcePhoenix.com

Interviewee: Mike Remedios, senior vice president and chief technology officer
Company: ReSourcePhoenix.com Inc., an application service provider specializing in financial and back-office services and out-sourced business and IT staffing
Location: San Rafael, Calif., just north of the Golden Gate Bridge in Marin County.
Tenure: Since September 1998
Number of IT employees: About 95
Number of employees (end users): About 250; "That's hard to figure out because we're hiring fast and furiously. We hired 33 people in January."
History: Was part of diversified umbrella company Phoenix American Group; spun off as privately held company in 1997; went public in October.

Did employees have stock options at the initial public offering? "Not everybody, but I'm glad to say that I did. That's one of the reasons I came here."
How has the company changed? "When I first got here, there was a sleepy sort of Marin County feel. Now there's more of a quicker-paced, Silicon Valley feel of getting things done quickly and moving on to the next project."
Biggest recruiting challenge: "The San Francisco Bay area now officially has the most expensive housing in the country. And Marin is probably the most expensive area of the Bay area. But the traffic is better here, and it's green. It's like living in the country."
Clients include: Thomas Weisel Partners LLC (investment bankers), GE Capital Aviation Services and The California Wellness Foundation
Workday: "Different groups have different work ethics. The accountants come in at 5 or 6 a.m., so the IT group supporting them comes in between 6 and 6:30 a.m. and leaves at 4 or 5 p.m., unless there's a big project."
What's the atmosphere like? "People like to hang out and chat, so we have table tennis and Foosball and an exer-cise room. We try to keep it as lax as we can so people can let loose when they're feeling up-tight."
How do you deal with IT's needs to serve both the client and the company? "We try to balance all the different requests and try to be proactive on the business side. We make sure that everyone, even the most junior programmer, understands who they support. Attitude is really important."
Do you manage IT by function or by client account? "We have matrix management. We have functional teams because there are issues with cross-training. But we also have to be client-centric in our deliverables. So we have project managers who drive deliverables on the business [client] side and functional project managers who look after the infrastructure."
Kind of offices: "We're in two buildings with an open courtyard in between where people can go smoke – and we can all stare at them and make them feel bad."
Must people carry beepers? "We have BellSouth interactive two-way pagers that are actually little 386-based computers with 1MB of memory, packet switching and a little keyboard. I couldn't live without mine because I have Outlook set up so that all my important e-mails are forwarded to my pager, and I can send replies. I have a cell phone, but I find it intrusive."
The one thing everyone complains about: "Everyone would like to have more investment in the company. We had 96% participation in our employee stock purchase program, which is extremely high. The limit is a maximum investment of 15% of your salary."
Bonus programs: "Quarterly bonuses based on company performance and occasional spot bonuses for exceptional [individual] performance."
Quote: "The thing that most IT people come here for is the variety and depth of the technology. We get a lot of former consultants because they can get the best of both worlds – a variety of clients and applications but no travel." *– Leslie Goff*

PAUL A. STRASSMANN

Fighting the jobs gap

META GROUP RESEARCHERS say there are 400,000 unfilled IT jobs in the U.S., and that figure is expected to balloon to 1 million by 2003. Should your long-range IT plans include the added costs of paying spiraling salaries to fill these jobs?

Only if you want to run afoul of your senior executives.

Whenever there's a shortage of personnel, wages rise, turnover increases and quality declines as companies hire less-qualified applicants. Every economic indicator confirms that this is happening today. IT staffs are being paid higher salaries than their business counterparts with equivalent educational and career backgrounds. Nearly 70% of the organizations surveyed by Meta Group say they pay their IT staffs more than what they pay end users.

Scarcities, whether in oil, steel, food supplies, switchboard operators or engineers, have never lasted too long. All forecasts that have extrapolated shortages into projections of chronic scarcities have always been proved wrong. This is particularly true when a sudden shortfall is caused by a combination of a cut-back in supplies and a squandering of resources. The recent jumps in the prices of gasoline and heating oil are good examples of this phenomenon. Recent scarcities of plywood, orange juice, gold, wallboard and the metal palladium have shown similar patterns, but these shortages will be reversed as soon as higher prices bring supply and demand back into balance.

Current anxieties about the approach of an extreme IT labor shortage are ripe for such a reversal. Corporate executives are preparing to insist on fewer labor-intensive solutions to their software needs. Rising wages, increased turnover and declining quality won't be tolerated as the IT budgets keep creeping up to approach the size of corporate profits. While the employable U.S. workforce is growing at the annual pace of only 1.5%, adding another million positions to an IT workforce that's already expanding at a torrid rate of 15% is no way to improve the productivity of the computer people.

Enter the application service providers. As soon as ASPs can deliver reliable user support over networks, organizations will find that renting complete business solutions instead of constructing and maintaining their own home-cooked spaghetti code is an increasingly attractive alternative. There are already ASPs that can satisfy cross-functional systems needs, such as in enterprisewide resource management in specialized market segments like automobile assembly, wholesale drugs and electronic merchandising.

The idea that each organization must design its own computing infrastructure, master the adoption of technological innovations and maintain all software enhancements is obsolete. It's as medieval a concept as the dependency of each 12th century European town on its merchant, shoemaking, furniture manufacturing and ironworking guilds. These labor-intensive and immensely costly institutions lost their economic viability as soon as national and — ultimately — global trading organizations were able to deploy capital over a wider geographical base than was made possible by those who relied only on local economies.
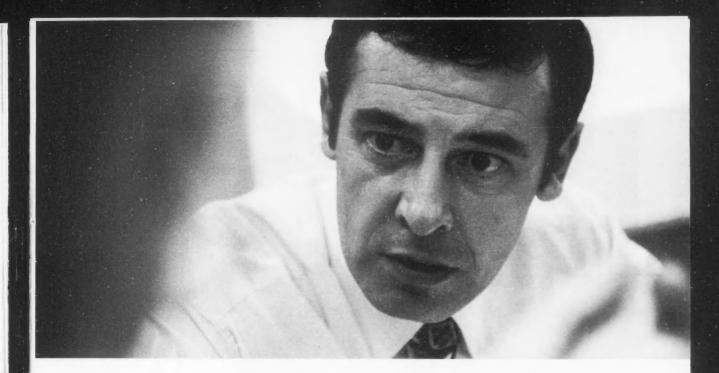
Many IT executives will be sitting down this spring to draft their long-range plans. If they propose large salary increases to compensate for the prospect of a gruesome labor shortage, business executives will demand alternative solutions.

Business as usual, or even swapping company heads for offshore consultants, won't solve the problem. Instead, plan to phase out the wasteful insistence on IT self-sufficiency — what I call the medieval guild phase of systems construction. Prepare to rent systems services from huge services corporations to spread the costs of an increasingly expensive and risky systems infrastructure that only giant integrated firms will be able to afford. This is why all the hand-wringing about the coming shortage of IT personnel should be seen as nothing but a self-serving prophecy by consultants who thrive on scare tactics that would increase the demand for their premium-priced services. ▶

Plan to phase out the wasteful insistence on IT self-sufficiency.

Strassmann (paul@strassmann.com) views all technological progress as a way to correct imbalances between available means and emerging new business demands.

Was it fear that drove 9 of the top 10 Internet companies to Network Appliance?

Call it fear. Call it prudence. Or just call it common sense.

Either way, one thing's sure. Those industry leaders know what happens when mission-critical data's unavailable. Revenues stop. Potential customers vanish. Reputations sour. In short, a single — even brief — data outage can plunge any of them waist-deep into one very ugly situation.

Now, a little logic. Surely, you don't need more system complexity, more potential problems. So a sensible response to the data-outage threat should be as simple, reliable and easily managed as — well, an appliance. Which is exactly what drew those companies to Network Appliance™ storage and Internet caching solutions. That, and 99.99+% uptime. Plus the speed they add to data delivery. Not to mention the ability to recover lost or corrupted data in minutes instead of hours or days.

OK, maybe you think the data-outage menace shouldn't really fill hearts with terror. But then again, being temporarily "out of business" isn't appealing, either. So why not look into what some very smart companies view as the ultimate "risk-avoidance" system? Visit us at www.netapp.com/internet/. You'll find all the details you'll want. And absolutely nothing to fear.

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Internet
Drag
Race

Auto industry rivals GM and Ford have steered their
decades-long feud into cyberspace. So, which one is
winning the Web battle? By Steve Ulfelder

A MUSTANG. A CAMARO. A 2 a.m. stoplight.
No cops anywhere.

Ford Motor Co.'s global e-commerce
unit and e-GM, General Motors Corp.'s
new online division, inherit a fight that
goes back 92 years. The field of battle is
the so-called information superhighway.
The stakes? Mark Hogan, e-GM president, says: "GM will
become e-GM." He pauses. "No, that's not it: GM will be-
come GM.com."

Ford and GM have absolutely hurled themselves into the
business of selling cars online. Their lists of deals, align-
ments and relationships is dizzying. Ford/Yahoo Inc.,
GM/America Online Inc. Ford buys into Microsoft Corp.'s
CarPoint. GM cuts a deal with NetZero Inc., a provider of
free Internet access in Westlake Village, Calif. Ford creates
Auto-xchange, an online procurement system, with Oracle
Corp. Hours later, GM announces it has teamed with Com-
merce One Inc. to create a similar system.

(There's a deal that Ford and GM are doing together,
along with the third member of the Big Three, Daimler-
Chrysler. The automakers last month unveiled plans to join
forces on a common Internet automotive trade exchange
that will offer procurement transactions for the Big Three,
other automakers and their extensive supply chains.)

At first glance, GM and Ford's deals look scattershot.

When discussing online business, they speak of new sales
channels in one breath, in-car Internet access in the next
and back-end supplier partnerships in the next. Colossal
strategy? Or are the companies making it up as they go
along, unable to prioritize or even distinguish among the
opportunities?

In looking at GM's and Ford's Internet-related gambits,
it's not unreasonable to ask: What the hell is going on here?

But that's the second-most important question. The *most*
important question, as anybody who ever blipped the
throttle at a traffic light could tell you, is: Who's winning?

We look at three critical areas — the people in charge,
the progress toward a Dell Computer Corp.-style build-to-
order model and possible confusion in the sales channel —
and see which company could peel out to an early lead in
the race to shorten delivery times, enhance (or replace?
More on that later.) the car-buying experience and stay
involved with the consumer throughout the life of the car.

The Bosses

GM and Ford each have CIOs and e-commerce chiefs
who are widely respected by analysts and industry insiders.
But if you believe that the man at the top needs to set the
agenda when a mature, enormous company dedicates itself
to online business, Ford is out front.

The influence of Ford CEO Jacques Nasser, a devil-take-

BUSINESS FACE-OFF

the-hindmost boss if ever there was one, is mighty. [Business, Aug. 30.] Make no mistake: Right now, Nasser is Ford. And Nasser *gets* information technology.

"Nasser's commitment to the Net is absolutely genuine," says Csaba Csere, editor in chief of *Car and Driver* magazine in Ann Arbor, Mich. "He thinks the Net is a huge engine of economic growth, and he wants Ford to capitalize on that." Csere says he recently idly mentioned an idea for an Internet business to Nasser — who, only half-kiddingly, said "he wanted to fund the idea right then and there."

G. Richard Wagoner Jr., GM's freshly minted CEO, is a lesser-known quantity. At 47, Wagoner — named last month to replace John F. Smith Jr. — is the company's youngest CEO ever. He says attracting Internet-savvy younger buyers is one of his "critical" challenges.

Until Wagoner makes his mark, GM's e-commerce initiative falls to Hogan. His challenge: Use a single online presence to sell more than half a dozen overlapping brands (like Buick and Oldsmobile, GM's semipremium brands, or the Chevy Truck and GMC Truck divisions). Those brands have long enjoyed independence and sometimes treat each other as bitter enemies.

"What matters is the ability of e-GM to come to decisions quickly," says Adam J. Weiner, a senior analyst at Gomez Advisors Inc. in Lincoln, Mass. "Hogan is very much aware of the need to make the right decisions quickly. He won't wait around."

How does Hogan sell the brands on electronic unity? "Show them the compelling capability of communizing software or code where we don't detract from a brand's image," he says. "The key message to [GM] employees is that we're moving from a make-and-sell model to a sense-and-respond model. It's all about the customer being in control."

Hogan's words are eerily similar to those of Jim Yost, Ford's CIO since last summer: "The Net has transformed the buying process," he says. "It was dealer- and manu-

facturer-controlled. Now it's consumer-driven."

So both Ford and GM are singing from the same hymnal. And it's the right hymnal for the times — the one full of hosannas to the consumer. You'd expect that from giant operations with crack public relations teams. The difference: Nasser. He's a whip-cracker. His power is less diffused than any CEO's power at GM would be. And he believes in the Web.

■ **ADVANTAGE:** *Ford by a fender*

Can We Build One for You?

The ultimate goal is build-to-order automobiles, and both manufacturers are happy to acknowledge it. Achieving build-to-order is "very important," Hogan says. "In the GM system, there's $40 billion in inventory at any given minute. With a rapid order/delivery model, you can take a lot of that out. Vehicles don't age well like wine."

"GM wants to move to direct sales in the next five years," says David Cooperstein, an analyst at Forrester Research Inc. in Cambridge, Mass. A new report from Robertson Stephens, a San Francisco-based subsidiary of Fleet Boston Financial Corp., warns that "build-to-order should only increase manufacturers' efficiency if fully integrated throughout the manufacturing process."

"We've got to connect the front to the back," Ford's Yost says, referring to the company's Web presence and its procurement and manufacturing systems. To do that, he says, Ford will "focus on the middle, on getting a seamless process." How far along this path is Ford? "It's always difficult when you've got legacy systems and practices," Yost says. "IT's mind-set has changed. We used to focus on creating efficiencies. We still do that, but now our focus is [on] delivering high value to the customer. We're asking [Ford IT] people to do something fundamentally different."

The Web has forced GM to rethink its systems as well.

> "
>
> **[Ford CEO Jacques Nasser] thinks the Net is a huge engine of economic growth, and he wants Ford to capitalize on that.**
>
> CSABA CSERE, EDITOR IN CHIEF, *CAR AND DRIVER*

BUSINESS FACE-OFF

Internet Drag Race

Before GM refocused on the Internet, "we had a lot of autonomous units that didn't let us do all the knowledge sharing and communicating we would have liked," says GM CIO and group vice president Ralph Szygenda. "We had 1,300 e-mail servers. Now we've got 150."

Naturally, both automakers have partnerships devoted to increasing supply-chain efficiency. GM's TradeXchange, created with Walnut Creek, Calif.-based Commerce One, is aimed at creating an online parts purchasing system. And the company's Saturn division, which often marches to its own drummer, recently linked up with Computer Sciences Corp. in El Segundo, Calif., Siebel Systems Inc. in San Mateo, Calif., and The Reynolds and Reynolds Co. in Dayton, Ohio, to launch a Web-based system that would handle customer service and inventory management. The Saturn project may be a pilot for other GM divisions. Szygenda, who recently saw "chief Internet strategist" added to his title in a move that underlines the importance of the Web to GM, says the company "will move some aspects of this system to other divisions."

Meanwhile, Ford has teamed up with Oracle to create Auto-xchange, an online procurement system for suppliers.

Dan Garretson, a senior analyst at Forrester, calls GM's system "more sweeping . . . a more comprehensive trading exchange." He says the Ford/Oracle

Auto-xchange focuses on direct materials that actually go into the vehicles, while the GM/CommerceOne system "wants to bring everybody in," including suppliers of indirect materials such as office supplies, which don't actually go into vehicles. And that's a lot — GM spends about $87 billion per year with more than 30,000 suppliers worldwide. Ford pegs its annual purchasing at $80 billion, with more than 30,000 suppliers.

Some experts say both GM and Ford have promised more than they can deliver. Analysts are skeptical about the automakers' claims that TradeXchange and Auto-xchange will be fully deployed this quarter as promised. However, GM did open TradeXchange to at least some suppliers in December.

■ **ADVANTAGE:** *GM pulls even, with a front-to-back Internet vision that's both broader and further along than Ford's.*

Dealer's Choice

A recent headline in *The Wall Street Journal* read: "Auto Executives Seek to Rebuild Ties With Dealers Irked by Recent Moves." One of the moves in question is automakers' apparent desire to end-run dealerships — even while they praise them as vital partners for the foreseeable future.

Dealers are the immovable objects in a carmaker's irresistible drive to serve consumers. Laws vary by state, but they generally make it impossible for anybody but a licensed auto dealership to sell a new car. The National Auto Dealers Association (NADA) has lobbied long and hard to make this so. "*Dealers* have customers," says NADA spokesman Mike Morrissey. "The consumer buys cars from *them.*"

Both Ford and GM understand the power of the dealer — and speak accordingly. "They're very important," says Ford's Yost. "And they will remain important for quite some time."

So why are the dealers ticked off?

The fact that GM and Ford are investing like crazy in online buying services has something to do with

it. The carmakers insist they look forward to a rosy future with their dealers. But you can't blame dealers for wondering. Both are finessing the dealer uprising. Peter Look, president of Ford's E-Consumer division, concedes: "Over the past year, as we launched so many online initiatives, we weren't thinking through the entire process. We hadn't interacted well with our dealer body. We've corrected that. The dealers know we're not going to go around them."

GM's Hogan says much the same thing, calling GM's relationship with dealers "strong." And in the future, he says, "the dealers' revenue source will be enhanced by focusing on the ownership experience."

Moreover, Gomez Advisors' Weiner says studies indicate "the visit to [a] dealership is not so despised until negotiation." He says "when it comes to consummating the transaction, the Net won't displace dealers." OK. But does anybody *like* going to a car dealership? This uneasy partnership bears watching.

Given that both Ford and GM appear to be addressing their channel conflicts, Ford may win this category by default. Reason: With Volvo, Lincoln, Jaguar and even an Aston-Martin sale or two, Ford offers more premium brands in the U.S. than GM, whose premium U.S. marques are Cadillac and Saab. And premium brands, where service and relationship are more important than price alone, stand to be affected less dramatically — or at least less quickly — than low-end marques.

■ **ADVANTAGE:** *Ford by a Jaguar hood ornament.*

So for now, give Ford an edge over its rival. A small edge. Margin of victory? Maybe one Jacques Nasser visit to one slow-on-the-uptake manager's office.

In any case, here's the lead-pipe cinch: Ford and GM will forever try to beat each other's brains out online. Why? A Camaro. A Mustang. A stoplight. No cops. That's why. ▶

Ulfelder, a former Computerworld *editor and reporter, is a freelance writer in Southboro, Mass. He can be reached at ulfelder@earthlink.net.*

The Road to the Net

RALPH SZYGENDA, GM CIO: Before the company refocused on the Internet, "we had a lot of autonomous units that didn't let us do all the knowledge sharing and communicating we would have liked. We had 1,300 e-mail servers. Now we've got 150"

GM	THE COMPETITORS	FORD
Detroit	**Headquarters**	Dearborn, Mich.
$176.6 billion	**1999 revenue**	$162.2 billion
$6 billion (up 103%)	**1999 profits**	$7.2 billion (up 67%)
594,000	**Employees (1998)**	345,175
Pontiac, Chevrolet, Buick, Oldsmobile, Cadillac, Saturn	**Notable brands**	Jaguar, Lincoln, Mazda, Mercury, Volvo
1	**Fortune 500 rank**	2

JIM YOST, FORD CIO: "IT's mind-set has changed. We used to focus on creating efficiencies. We still do that, but now our focus is delivering high value to the customer. We're asking [Ford IT] people to do something fundamentally different"

GM

August: Formed e-GM, which will oversee all new and existing e-commerce and Internet-related activities, including research and development, manufacturing, sales and financing.

August: Announced the development of Internet applications for GM vehicles and their manufacturers.

November: Announced supply-chain pact with Commerce One that will

complement GM's ongoing Internet efforts, giving buyers the ability to order customized vehicles on the Web.

December: Opened TradeXchange, a business-to-business Web auction and catalog system for purchasing materials from suppliers.

December: Announced the replacement of its legacy networks with a global IP network to link design facilities on four continents.

December: All Saturn U.S. retail facilities went online with designated e-commerce consultants, whose goals are to respond to online customer queries within one business day.

January: Announced deal with AOL and NetZero to put its GM BuyPower site on their sites. Goal: Generate 10 to 15 times the number of leads going to search engine GM BuyPower.

Ford

September: Announced formation of the Consumer-Connect Group, which will be responsible for all direct consumer contact and integrating dealerships into Internet activities.

November: Announced the Auto-xchange online procurement system, an integrated electronic automotive supply chain to be created and run by a newly formed joint venture with Oracle.

January: Announced it will equip 2001 model-year vehicles with voice-activated

January: Ford and Yahoo teamed up to develop personalized services for Yahoo Autos, tailored to specific vehicles. Owners can register their Ford vehicles (Ford, Lincoln, Mercury, Mazda and soon Jaguar and Volvo) at either of two Web sites: Yahoo Autos or OwnerConnection.-com, a service from Ford.

telematics systems, offering advanced security features and information access.

January: Unveiled alliance with UPS Worldwide Logistics in Atlanta that will use Web technology to speed the delivery of new cars to dealerships.

February: Announced creation of new company (with Trilogy Software Inc. in Austin, Texas) to develop Ford's consumer Web sites.
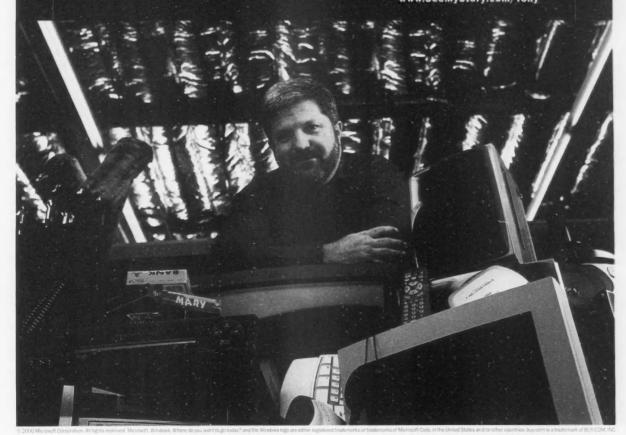
Web Delivery - in an Hour

IT plays a key role at online convenience store Kozmo.com, where technology and business processes help it accomplish its goal: speedy — and free — delivery of snacks, videos and the like. By Erik Sherman

WITH LEGS PUMPING hard on icy pedals, the spandex-wrapped rider weaves through traffic, cabbies cursing as he passes. He eyes his destination and cuts over, dismounting to lock the bike and head upstairs. When the apartment door opens, an arm reaches out from a bathrobe, takes a sack from the rider and pulls back.

E-mission accomplished.

In the past two-and-a-half years, Kozmo.com Inc. has managed to create a new face for e-commerce. The city might be New York, Boston, San Francisco or Washington. From 10 a.m. to 1 a.m., people can go to *www.kozmo.com* to order CDs, event tickets, videos to rent or buy, snacks and takeout food. They pay by credit card and request a delivery time. The catch for Kozmo.com is that it offers delivery — an expensive service — free of charge, and promises to make most deliveries within an hour after the order is placed. That means the company needs business processes — and systems — to make this logistical madness work. Such demands raise information technology from a supporting position to a starring role, where decisions could make or break the company.

Dot Com-plex

Kozmo has all the characteristics of a dot-com operation. Started in 1997, the company launched its New York service in 1998. It's now in five cities and has announced plans to expand to 30 markets by the end of this year. Its growth to date has been funded with $28 million in first-round venture financing. According to knowledgeable sources, the company is expecting to complete a substantial second round of financing. News reports in January claimed that Amazon.com Inc. and Softbank Inc. would invest between $80 million and $100 million, though company representatives say the deal isn't final.

And just last month, Kozmo announced a five-year comarketing agreement with Starbucks Corp. The deal will bring Starbucks $150 million from Kozmo and give Kozmo publicity in Starbucks' coffee shops. In return, Kozmo will sell Starbucks coffee on its site.

Although dot-coms have a reputation for putting stock price before profits, making money is the ultimate goal and proving ground for every business. Kozmo prices goods comparably to what local convenience stores ask, then offers gratis delivery. That combination can seem disastrous to observers.

Web Delivery, page 56
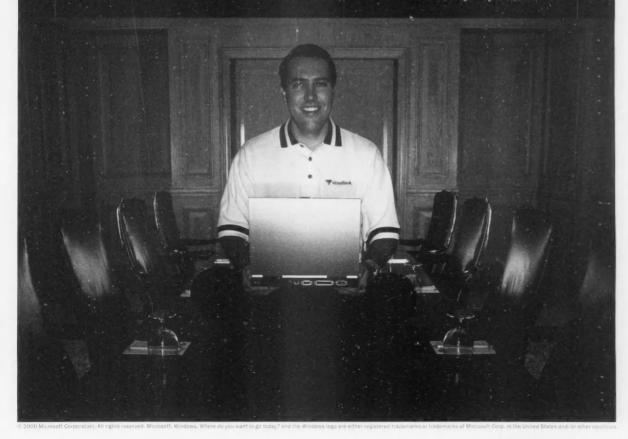
WITH VERY DETAILED BUSINESS PROCESSES and powerful – yet space efficient – technology, Chief Operating Officer Skip Trevathan and co-founder and CEO Joseph C. Park have helped build Kozmo.com over the past two and a half years.

Web Delivery

"Certainly, there will be people who use it. Nobody ever went broke banking on laziness," says Malcolm Maclachlan, an e-commerce analyst at International Data Corp. in Framingham, Mass. "Whether they can make a profit doing this? Gosh, it's not a business I'd want to be in."

Kozmo management — and investors — seem confident that the company can drive to profits. Delivery services may be expensive, but the bet is that cost savings from serving an entire city from a few locations can take up the slack. To get to the black, the company's focusing on selling high-margin products and offering an assortment of goods that will increase the average order size.

But even with orders growing at a rate of 20% to 30% per month, Kozmo won't see daylight without efficient processing. First and foremost, that has meant finding solutions to business problems and developing systems to implement those solutions.

"All you have to do is look at the traditional types of problems that a retail business is going to have, that an e-commerce business is going to have," says Skip Trevathan, Kozmo.com's chief operating officer and former managing director of North American logistics at Memphis-based FDX Corp., parent of Federal Express Corp.

The solution: Divide a city into delivery districts, each with a warehouse

> **We can create huge amount of demand. We just have to make sure we do not create [it] faster than we have [can] fulfill [it].**
>
> **SKIP TREVATHAN, COO, KOZMO.COM**

ranging in size from 2,500 to 10,000 square feet or more. Warehouses typically hold a couple thousand items and are replenished several times a day by local distributors. It makes sense, but it's a logistical nightmare. Customers have to see what products are available at the local warehouse. Orders must travel to the right warehouse, be readied for delivery and end up at the customer's door within an hour.

Smart Division of Labor

Kozmo uses a three-tiered computing infrastructure. Each warehouse has a server and PCs. The server processes business rules, handling such tasks as scheduling deliveries and managing inventory reorders. Employees use the PCs when receiving goods, picking orders and sending deliveries.

The warehouse servers connect though a wide-area network to redundant Sun Microsystems Inc. Enterprise 4500 machines, which act as servers for an Oracle Corp. database. The Sun 4500s are maintained and run by Exodus Communications Inc. at its New York facilities. Customer orders go to Web servers at the same site.

The choice of hardware was economically important. "You can put a lot more power in [the 4500s], and they're space-efficient," says Chris Siragusa, Kozmo's chief technology officer. "It's all about how much you can fit on one rack." According to Siragusa, 50 square feet in a colocation facility costs a few thousand dollars per month, and peak Internet bandwidth of 5M bit/sec. usually costs between $4,000 and $5,000 per month. Yet Siragusa says the expenses are justified. Kozmo can focus on its core strengths of building systems and attracting customers, while the colocation facility manages network traffic and provides additional bandwidth as customer demand increases.

By outsourcing host and network tuning, Siragusa's department is able to concentrate on its core competencies, such as writing software for warehousing and dispatching systems. Kozmo considered using third-party systems but decided that would leave too many unsatisfied requirements.

Flexibility and openness are vital to the company. Not only do customers have to see custom Web pages that show only the products available in their areas, but dispatching systems must also account for the transportation mix in a particular city, based on existing traffic characteristics. For example, New York relies heavily on bicycle messengers, but San Francisco uses motorized delivery — which comes in handy when delivery people face the city's famously steep hills.

To avoid disappointing customers, Kozmo needs systems that know when meeting a delivery deadline is impossi-

Kozmo.com

Founded: 1997

Employees: About 2,000

Number of IT employees: 75

Headquarters: New York

Competition: UrbanFetch.com Inc. in New York

ble. "We can create a huge amount of demand," says Trevathan. "We just have to make sure we do not create demand faster than we have the facility to fulfill them." The systems use a scheduling technique to measure product availability and delivery capacity. In unusual conditions, such as a heavy January snowstorm in the Northeast, a Web page might warn customers to expect delays.

Handling Problems

Growth may have been steady, but Kozmo's systems have seen some bumps in the road. There are some browser compatibility problems.

"When I use it from my work computer, I have much better luck," says Kozmo.com customer Denise Cox, who lives in New York. "At home we have [America Online], and AOL doesn't seem to agree with Kozmo's Web site. We can't download the descriptive pages."

There are also some annoying limitations in the user interface. "If you misspell anything [when searching for a movie title], even if you leave a punctuation out, [the page] will say it doesn't exist," adds Cox. "You want them to give you some slack. Let me misspell one letter and still be able to see the movie instead of wracking my brain to see what's wrong."

Potentially disconcerting were the problems some customers had in accessing the site as recently as last fall. The company started with Windows NT servers and an IBM DB2 database. They worked well for smaller amounts of traffic but couldn't scale to meet increased demand. "As we grew, they became less and less useful," says Siragusa. So the company moved to its current server/database configuration to alleviate the ordering bottlenecks.

Kozmo's technical team is also being forced into other sorts of changes. IBM's Net.Commerce, which Kozmo uses to manage the delivery of Web pages to customers, is moving from C++ to Java support. To continue using the product, Kozmo has to train existing staff and hire people with both sets of skills. That eats up time.

"It's not something I'm too happy about," says Siragusa, "but the architecture they're moving to is going to be a better architecture." Every time a vendor issues a product upgrade, the

Kozmo staff examines whether the tool is still a fit for the business. More important to Siragusa than the individual tools is how they all work together.

The importance of Kozmo's technical department becomes obvious in the breakdown of the company's staffing. Counting messengers and part-time warehouse staff, Kozmo has more than 2,000 employees. But only 150 people work at its corporate offices, and half them are in the technical department.

To manage all the development work, Siragusa has three major departments: one that focuses on logistics and warehouse issues, another that handles Web development and a third that manages information systems for reports and decision support. Each department has a manager to provide a coherent vision. Everyone else works on ad-hoc teams that are put together to complete specific projects. As people finish their part on one project, they move to another.

What makes the approach really unusual is that the company rarely knows far ahead of time which project will be

Venture Partners

Kozmo.com has drawn venture capital money from the following companies:

- **Flatiron Partners,** New York
- **Oak Investment Partners LP,** Westport, Conn.
- **Chase Capital Partners,** New York
- **J. W. Seligman & Co.,** New York
- **Hambrecht & Quist Group,** San Francisco

next on the schedule. Because of the business's rapid growth and volatility, Siragusa has many project plans for future developments but often has to implement them at the drop of a hat. This approach to management requires him to stay flexible and be ready to address the most urgent issues as they occur.

Siragusa says he sees growth as the biggest challenge. "Trying to stay six months ahead of that growth is a challenge," he says. "The other [challenge] is the growth of the department itself — the number of people we're bringing on and getting them integrated. You want to keep them happy."

Even if things get rocky, though, Kozmo has found a way to keep customers coming back. "They're always so friendly, that's why I like them," says Cox. "Even when you're calling to complain." ▶

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BUSINESS CONSULTING

A FEW MONTHS into a maternity leave, Cathy Benko received a call at her San Francisco Bay area home from her boss, the chairman of Deloitte & Touche Consulting Group LLC. Would Benko like to oversee the company's worldwide e-commerce service initiative, which would likely include the creation of a dedicated business unit? her boss asked.

It was an opportunity Benko was hard-pressed to pass up. The e-commerce market is expected to generate more than $20 billion in revenue worldwide this year, according to market researcher International Data Corp. in Framingham, Mass. Information technology consulting firms, both large and small, are reorienting their strategic focuses, creating dedicated e-commerce divisions and hiring dozens, if not hundreds, of people.

Among those firms is Deloitte & Touche competitor Pricewaterhouse-Coopers' Management Consulting Services practice, which launched an organizationwide e-commerce initiative last year. The new group cuts across all the New York-based company's consulting practices, including strategic management consulting. It's been hiring hundreds of people each month to staff the group.

Strategic Initiatives

For Deloitte & Touche, establishing a separate business unit like the one Benko has been charged with creating is unprecedented. The fact that the firm is seriously considering creating one, Benko says, drives home just how important this area of the marketplace has become to IT consultants and their clients.

Now back in the office, Benko is working furiously to create a business plan that will enable the company to support its clients with end-to-end e-commerce services that integrate business strategy with leading-edge, Web-enabled technology.

Although the plan is still in the works, the human resources needed to staff the unit are clearly immense, says

MICHAEL PUSATERI was hired by consultancy Proxicom because of his hands-on experience managing Marriott's Web site

Benko. Early estimates show a need for at least a dozen senior-level partners supported by perhaps hundreds of people with varied levels of experience and expertise in business strategy, enterprise computing, Web design and interactive marketing.

"With the kind of market that is looming right in front of us and outra-geous growth rates that keep increasing, we're looking inside and outside for talent," Benko says. Moreover, she says, Deloitte & Touche is looking to recruit people who are outside the stereotypical hiring profile for a Big Five consulting company.

In Benko's unit, pinstripes will sit alongside ponytails and jeans. The key prerequisite for new hires, she says, is prior hands-on experience with e-commerce. But finding people who fit that description is no easy task, and it's the difficulty of the search that's causing firms to break traditional hiring molds across the IT consulting arena.

IT consulting firms are looking for people who, as members of a team, can help clients integrate both existing technology and business processes with new online business strategies — endeavors that increasingly involve complex transaction processing that goes well beyond simple order-taking.

When it comes to e-commerce, there are very specific technical skills IT employers want their consultants to possess.

E-COMMERCE EXPLOSION

Consulting companies are redirecting efforts to capture a chunk of this lucrative market, creating all kinds of opportunities for e-commerce-savvy consultants. By Holly Hubbard Preston

BUSINESSCONSULTING

Depending on the size and volume of the sites to be developed, an e-commerce consultant or specialist should not only understand basic HTML, databases and Web server hardware and software but also a client's needs, so the client can manage the site after the consultants are gone. They must have team skills, since most sites contain more than just a Web page that's linked to a database and thus require a group development effort.

Employees must be able to lead a team that includes skilled people who know graphics, databases, secure credit-card transactions, e-mail servers, software client license issues and server load balancing (for large sites) inside and out and who have reliable relationships with Internet service providers, in case a client needs to co-locate some servers away from its immediate premises.

And because the lines dividing IT consulting and management consulting are so blurred in the e-commerce arena, a strong business orientation is a real plus — so much so that universities like MIT are now creating degrees that combine computer science with more traditional business curricula.

Web Experience Wanted

That's great news for e-commerce clients like Laura Southard, co-founder of Seattle-based Healthy Environments, an online retailer of allergy-control products. For her, a consultant who can fully understand the impact browser errors and software incompatibilities have on Healthy Environments' market image and fix them quickly are worth their weight in gold. "Browser errors are like having a closed sign on your site," Southard says.

It's that kind of marketing savvy that Proxicom Inc., a midsize IT consulting firm in Reston, Va., with approximately 500 employees, had in mind when it recently hired Michael Pusateri, Marriott Corp.'s former vice president of interactive sales and marketing, as its senior vice president of sales and marketing.

Pusateri acknowledges that he had little traditional IT experience. But what he did have — and what Proxicom wanted — was hands-on experience managing Marriott's 3-year-old Web site. The site, which was built and maintained with the help of IT consultants, including Proxicom, enabled Marriott to increase its reservations by more than 200% after the site launch.

For Pusateri, the opportunity to leave his plum job at Marriott to work for its IT consultant, Proxicom, wasn't a tough sell.

"When something [contributes] beyond 5% or 10% of a company's distribution or revenues stream, it's going to become strategic," he said. "That is what is driving this growth in the e-business marketplace right now. Companies are deciding it's mission-critical and boosting investment levels as much as tenfold."

Proxicom ought to have a pretty good pulse on the market. In just five years, it has successfully completed 600 e-commerce-based projects for big-name clients like Marriott, Mercedes-Benz Credit Corp. and Mobil Corp.

The conundrum that companies like Marriott face, says Pusateri, is how to keep their e-commerce initiatives up to speed with those of the rest of the market. Even experienced, online-media-savvy corporations like Marriott simply can't go it alone when it comes to deploying and maintaining their e-commerce sites.

Not only is it difficult to keep up with the pace of new technology releases, says Pusateri, but corporations like Marriott simply can't attract the kind of experienced in-house talent they need to keep their sites ahead of the market.

"In the hotel business, you don't have the value proposition to attract a smart Web professional that a consulting firm does," Pusateri says. "[IT consulting firms like] Proxicom specialize in this, and because it does, [it] is going to be able to attract the best talent."

Focus on Selling

Finding people like Pusateri who have hands-on experience coupled with technical know-how is something that many IT consulting firms are grappling with. Larry Shafer, founder of San Francisco-based Transact E-commerce Corp., a management and technology consulting firm, says that "recruiting is [as] important as selling services" to the company. His firm expects to grow from eight to 20 people this year.

Right now, Shafer is actively seeking prospective employees who have experience in leadership positions in e-commerce start-ups — vice presidents of marketing, senior developers and experienced Web page designers. The key point of hiring people with that type of background, says Shafer, is that they have experience working in a start-up environment.

"For even the biggest corporations, launching a Web site is like working as a start-up," Shafer says. "We need people who can think that way. We don't want some consultant who has been through boot camp at Anderson [Consulting] and doesn't understand what it's like to be a start-up and have limited capital."

As far as specific technology experience goes, Shafer, like many IT consulting bosses, is much more open-minded. "There's a recognition that technology platforms could completely change in three to six months. Right now, BroadVision and Vignette make the phone ring. In the next six weeks, it could be InterWorld."

E-commerce consulting, Shafer notes, isn't about technology for the sake of technology; it's about technology for the sake of selling. ▶

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"WITH THE KIND OF MARKET that is looming right in front of us and outrageous growth rates that keep increasing," we're looking inside and outside for talent," says Deloitte & Touche's Cathy Benko

BUSINESS QUICKSTUDY
FINANCIAL & BUSINESS CONCEPTS IN BRIEF

Due Diligence

BY LEE COPELAND

IN THIS AGE of acquisitions, hardly a day goes by without an announcement of a merger, large or small. Yet many deals are based on big-picture assessments of value, without all the parties involved knowing all the details.

Quite often, a proposed merger or acquisition gets canned or valued down following conflicts over intellectual property rights, personnel, accounting discrepancies or incompatibilities in integrating information technology systems. The process of researching, understanding and, in some cases, avoiding these risks is known as due diligence.

"Due diligence is going in and digging a hole in the ground and seeing if there's oil, instead of taking someone's word on it," says Joseph Bankoff, a partner in the intellectual property and technology practice at law firm King & Spalding in Atlanta. "If you don't do a sufficient amount of due diligence, you don't really know what questions to ask."

In the case of a technology acquisition, a due diligence investigation should answer pertinent questions such as whether an application is too bulky to run on the mobile devices the marketing plan calls for or whether customers are right when they complain about a lack of scalability for a high-end system.

Meeting Expectations

Due diligence entails taking all the "reasonable steps" to ensure that both buyer and seller get what they expect "and not a lot of other things that you did not count on or expect," Bankoff explains.

The process involves everything from reading the fine print in corporate legal and financial documents such as equity vesting plans and patents to interviewing customers, corporate officers and key developers. It helps to identify potential risks and red flags.

Greg Faragasso, an attorney at the Securities and Exchange Commission (SEC) in Washington, recommends examining public filings, especially the 8-K, which the SEC requires public companies to file when an auditor resigns. The docu-

DEFINITION

Due diligence is the process of examining the financial underpinnings of a corporation as one of the first steps in a pending merger, equity investment or large-scale IT purchase, with the goal of understanding the risks associated with the deal. Issues that could be reviewed include corporate capitalization, material agreements, litigation history, public filings, intellectual property and IT systems.

ment must state the reason for the departure. "The reason an auditor resigns is very often benign and due to legitimate disagreements," Faragasso says. "But an 8-K filed by auditors that quit could be interpreted as a red flag."

Increasingly, IT systems and professionals are playing a significant part in understanding the viability of a proposed merger or technology acquisition for two reasons: Incompatible systems often take considerable time and resources to integrate, and conflicting intellectual property rights can potentially curb a deal before it takes off.

According to John Haven Chapman, an attorney and general partner at Dignitas Partners LLC, a strategic venture-capital firm in New York, many deals hinge on intellectual property ownership and key IT personnel. "Who has the rights to the intellectual property in a spin-off situation or making sure the rights stay within a venture when an employee leaves" is critical, he says.

Every company handles intellectual property rights and patents differently, but for the most part, technology created by an employee during his tenure at a corporation belongs to the corporation, even though an individual's name appears on the patent.

San Francisco-based UCSF Stanford Health Care killed the 2-year-old proposed merger of four teaching hospitals partly because of IT integration concerns, auditors reported. In 1998, MedPartners Inc. in Birmingham, Ala., and PhyCor Inc. in Nashville halted a proposed $6 billion merger after discovering significant IT incompatibility issues.

"It's never as simple as it looks on paper," says analyst William Fiala at Edward Jones Co. in St. Louis. "There is a tendency to underestimate the complexity of integrating two systems or changing over to a

Risky Business
These firms spell out the IT risks of a proposed technology purchase:

- **Compass America Inc.** in Reston, Va.
- **Quantitative Software Management Inc.** in McLean, Va.

new system entirely."

Fiala cites Tomahawk missile maker Raytheon Co. in Lexington, Mass., as one example of a company that underestimated IT integration's potential impact. Last October, Raytheon officials stunned investors with much lower than expected earnings and pretax charges totaling $638 million. Part of the revenue shortfall stemmed from difficulties encountered in consolidating defense units from El Segundo, Calif.-based Hughes Electronics Corp. and Dallas-based Texas Instruments Inc.

"Raytheon had 45 general ledger systems after the acqui-

sitions. They are now trying to get down below 30, but that's still a lot, and [it] will take them years to implement a new SAP [enterprise resource planning] system to simplify their accounting even more," says Fiala.

Protective Measures

Warranties and assurances can be written into a merger document or software contract to protect those involved. For example, a potential buyer may discover problems in a technology under consideration after testing and interviewing customers during the due diligence process. As a result, the customer may withhold part of the purchase price in an escrow account until the bugs get fixed or custom code is written to solve the problem. If the problems aren't resolved in accordance with specifications, this reserve money could be used to address problems or be returned to the purchaser as a sort of rebate.

But many times, walking away from a deal is a better option than employing risk-shifting mechanisms.

"Deal paper will only protect you so far," Bankoff cautions. "In this economy, where the average life cycle of a product is only 18 months from launch to death, arguing about someone's warranty in court for five years is not productive."

Chapman concurs: "It's the kiss of death to make an improper acquisition or investment. Not only are you buying a dog, but the dog can kill your company." ▶

To Buy or Not to Buy: Points to Consider

Evaluating an IT purchase is a type of due diligence referred to as risk management. The big accounting firms and IT consultancies such as Compass America Inc. in Reston, Va., and Quantitative Software Management Inc. in McLean, Va., tackle technology risk management.

When determining if a software system or new technology fits business goals and the supporting IT shop, Compass America senior consultant Syd Hutchinson recommends considering the following:

- **Early adopter risks.** Is your company going to be the first to use the technology in great volume? It may perform well in restricted scenarios, but are there customers using it at the capacity your company would?
- **Life-cycle costs.** When buying or acquiring a technology, the purchase price is only one part of

the equation. Consider the maintenance and upgrade costs of running the technology for the next 10 years, not just the costs of getting it in the door.

- **Skill sets.** Does your IT shop possess the in-house skills to support the technology, or will adopting it require retraining the whole staff or signing an outsourcing contract to get proper coverage?

Douglas Putnam, vice president of services at Quantitative Software Management, is wary of "egregious buy-ins" and "super conservative bids" on time and materials in proposals because often "the customer gets stuck picking up the costs." He suggests writing warranties into the contract to ensure that conditions are met and specifying quantitative measures because "reliability can be a nebulous concept."

– Lee Copeland

■ *Are there business terms you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

JOE AUER/DRIVING THE DEAL

Never, ever agree to 'evergreen' clauses

VENDORS KNOW that information technology professionals don't manage contracts very well. As a result, many of the form contracts that vendors use contain an "evergreen" clause. This clause provides for the automatic extension of the agreement if the vendor isn't notified by a certain date a few years down the road, when no one has seen the contract for a while or there are new people in charge of the project for which the deal was done. When challenged about the clause, the vendor usually responds by stating that it "just makes things easy."

It sure does — for the *vendors*. They almost always get an automatically extended stream of revenue, sometimes called "easy money."

Vendors describe an automatic renewal as a customer convenience. They argue that it prevents service lapses and eliminates an administrative burden for you. The unmentioned risk is that you might be paying for a service you no longer need. But the reality is that a lifetime of administrative effort required to renew contracts is more than paid for if just one unwanted automatic renewal is prevented.

What's more, conditions and requirements change rapidly today. Automatic renewals pre-empt making choices. You should have the right to renew — but not the unexpected obligation.

Hand-in-hand with automatic renewal is price-increase language. One of the biggest scams is in software maintenance and support. It's not at all uncommon to see annual increases of 15% to 20% year after year and automatic renewals of the contract terms. So require vendors to notify you when maintenance is about to lapse and tell them to ask if you want to renew — at a not-to-exceed price you

both agree to at the start of the contract. This approach creates an opportunity to take stock of the situation, make a prudent decision and maybe even do some negotiating.

Always take the "never, ever evergreen" approach and you will be better for it.

Helping the Deal Initiators

It's great when your company's professional deal-makers know how to acquire IT products and services properly — when they have the right experience and tools and understand the negotiation process. But when they haven't enlightened the people who initiate

the deals, they've lost much of the opportunity to get the best deal. Many "best practices" procurement organizations actually "sell" their services to the deal initiators, noting benefits they will provide when called upon for help early.

What normally happens is that at the levels where deals actually begin — with the technical analyst or project manager — there is little knowledge of the negotiations process, or of how to increase negotiating leverage. Actually, these people don't even have "do better deals" as part of their job descriptions. By the time the negotiations-savvy parties get involved, negotiating leverage is lost, along with the possibility of getting the best deal.

Leverage is lost when a vendor is selected, a user insists that an industry-unique feature in a vendor's product is absolutely essential for a successful deal, someone announces that one of the potential suppliers is now a "strategic supplier" or "standard" for the company, a user

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issues a letter of intent stating he is going to do business with a given supplier and so on. Negotiations, including contract negotiations, should be completed prior to doing any of these things.

Given proper awareness, the deal initiators will know how to proceed appropriately, or at least know which resources to bring in to help, and when. Everyone should be constantly reminded that negotiations should be completed before your bargaining position is given away. Better deals will result.

Today it's critical that everyone in IT learns how to deal with vendors and how to manage the negotiations process. This type of training should be part of the required IT course curriculum for all current and incoming professionals at all levels. Technology purchases are so large, the risks so high and the rewards so great that you ought to at least get as much training as those vendor people you're dealing with. ▶

BRIEFS

Day Traders Face NASD Charges

NASD Regulation Inc., the regulatory arm of the National Association of Securities Dealers Inc., has charged eight online day-trading companies and individuals with violations ranging from misuse of customer funds to improper lending and using misleading advertising.

The following companies and individuals were charged: 1800Daytrade.com Inc. in Richardson, Texas; Donnelly & Co. in Midland, Texas; Self Trading Securities Inc. in Austin, Texas; Choice Investments Inc., also in Austin; LaSalle St. Securities LLC in Chicago; Heath A. Butler and Don A. Rouzan in New Orleans; Addison Securities Inc. in Dallas; and James Han.

To address the risks presented by day trading, NASD Regulation has

proposed rules in the areas of risk disclosure, margin requirements and appropriate behavior for day traders.

Jupiter Buys Analysts

New York-based Jupiter Communications Inc., an Internet market research firm, plans to spend $50.6 million to acquire two California firms: Internet Research Group Inc. in Los Altos and Net Market Makers Inc. in Berkeley. Each company provides strategic and consulting services and employs about two dozen people.

States Lose Millions in Tax Dollars to Internet

Because of U.S. laws governing the taxation of purchases, state governments lost $525 million in uncollected Internet sales taxes last year, according to a report from Cam-

bridge, Mass.-based Forrester Research Inc.

Purchases generally aren't taxed if the buyer is in a state where the seller has no physical presence.

However, the Forrester study showed that people don't seem to have strong objections to paying sales tax. Indeed, survey respondents said they would rather avoid shipping charges than taxes, according to Forrester.

Online British Bank

Britain's Abbey National PLC will launch a new online bank later this year called Cahoot, which will offer traditional banking services as well as other products, such as videos, to be offered by Cahoot's business partners.

Abbey National officials said they will spend around 200 million pounds ($322 million) developing Cahoot, and they said they expect it to have 200,000 customers by the end of its first year.

SNAPSHOT
Web Retail Watch

Top 10 online retail segments and the total spent in each in January:

Segment	Amount
Airline tickets	$317.6B
Books	$224.4B
Computer hardware	$224.4B
Software	$186.7B
Apparel	$181.6B
Hotel reservations	$163.8B
Toys/video games	$146.1B
Music	$143.1B
Health/beauty	$142.8B
Consumer electronics	$126.2B

SOURCES: NATIONAL RETAIL FEDERATION AND FORRESTER RESEARCH INC., MARCH 1
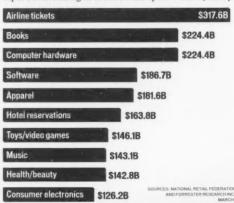
TOTAL ONLINE RETAIL SPENDING IN JANUARY	$2.8T*

Number of shoppers: 13.7 million
*Includes 14 additional retail categories

MISSION

Protect and manage the information that keeps the business growing.

Let it flow / The Division Head is banking everything on the new line. Customers are clamoring for details. Marketing is capturing data. Finance is crunching the numbers. Today, business runs on information. And IT has to keep all of it available. All the time. Relax. Tivoli Management Software offers a centralized view of data across multiple systems, applications and SANs. Plus, if any data should get derailed, it can be quickly and easily recovered to get you right back on track. That's why IT chose an integrated storage management solution from Tivoli Systems Inc., an IBM company. 1 888 TIVOLI-1. **www.tivoli.com/storage**

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TECHNOLOGY

HACK OF THE MONTH

There's no perfect way to protect yourself against a denial-of-service attack (or from unwittingly aiding such an attack). But some commonsense measures can give you some protection or at least blunt the impact. ▶ **66**

SGI CLUSTERING AGREEMENT

Silicon Graphics Inc. and SuSE Linux AG have agreed to jointly bring to market clustering software for the Linux operating system. SGI's Iris FailSafe high-availability clustering software will be ready by year's end. ▶ **70**

WIRELESS WONDERLAND

As part of its "AOL Anywhere" strategy, America Online has inked deals with six makers of mobile devices in order to expand wireless access to AOL services. The company's research has found that about 70% of households with AOL subscriptions also have a cellular telephone, pager or both. ▶ **70**

HANDHELD DATA'S POTENTIAL

The future seems to lie in handheld devices such as personal digital assistants and mobile phones that can exchange data with corporate systems. Sybase Inc. hopes to make that exchange easier with the latest release of its mobile database product, SQL Anywhere Studio 7.0. ▶ **71**

HANDS ON

Macromedia Inc. has bundled its Dreamweaver 3 application with Fireworks 3 to produce a serious tool for collaborative Web site design. And the icing on the cake is that the combined application is a pleasure to use. ▶ **72**

QUICKSTUDY
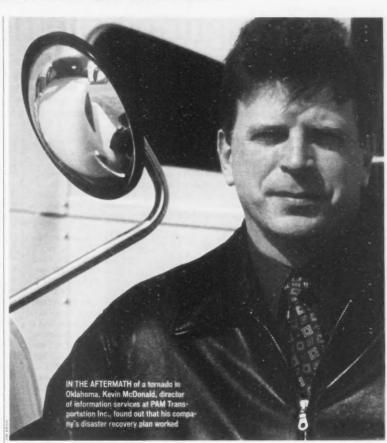
Server partitioning allows a user to slice up and distribute server resources for multiple applications running simultaneously. We describe how partitioning works and why it's important in keeping your systems running smoothly. ▶ **74**

SKILLS SCOPE

E-commerce and high-tech business skills are hot commodities in the job market. Salaries for the techno-savvy are soaring as companies scramble to attract candidates who aren't shy about asking for staggering compensation packages. ▶ **82**

EMERGING COMPANIES

Start-up VPNX.com Inc. gathers some of the most difficult and time-consuming chores a network administrator faces — building a remote connection and keeping it secure and working — into a single, packaged service that corporations can buy as they need it. ▶ **80**

IN THE AFTERMATH of a tornado in Oklahoma, Kevin McDonald, director of information services at PAM Transportation Inc., found out that his company's disaster recovery plan worked

BRINGING DATA BACK ALIVE

AS COMPANIES RECOGNIZE that the record of a customer's last call can be worth its weight in gold, data recovery has become a hot issue for information technology professionals. According to one study conducted last year, U.S. companies spent $11.8 billion to recover data during 1998. New technologies can help, but they need to be combined with serious contingency planning.

76

DEBORAH RADCLIFF/HACK OF THE MONTH

Fighting the flood

IF YOUR COMPANY counts on the Web for any form of commerce, I'll bet your marketing department is still breathing down your neck ask-ing if you're safe from distributed denial-of-service (DDOS) attacks. Well, you can tell them that while there's no foolproof solution, there are steps you can take to prevent becoming a victim of — or an unwitting co-conspirator in — such attacks.

DDOS attacks involve three layers — the victim Web site, the Internet ser-vice providers (ISP) and the "zombie" machines that un-wittingly launch the attacks. The organizations involved at each layer hold some cul-pability.

The Zombie Layer

To launch the attacks, crackers broke into hun-dreds of servers, most of them at universities, and installed .exe Trojan horse programs.

University servers make dan-gerous Internet neighbors. They are notori-ously the least-protected machines connected to the Internet, making them the favorite launch points of hackers even before the days of Kevin Mitnick.

Here's how to prevent your servers from being used as zombies in future DDOS attacks:

■ Create and enforce secur-ity policies that follow best security practices, says Jeff Johnson, president of Meta Security Practices Group in Washington.

"Each of the machines used in the [recent denial-of-service] attacks weren't even taking reasonable security measures," says Johnson.

■ Scan regularly (at least once a month) for Trojans and vulnerabilities, says Jerry Zepp, chief security officer at Comstar.net, a business hosting firm and Internet provider in Atlanta.

He says his favorite scan-ner is available for free at *www.nessus.org.*
■ Raise user awareness. Since Trojans are often downloaded in .exe mail at-tachments, remind users not to open them, emphasizes Zepp.
■ Close unused UDP, TCP and FTP ports, which can serve as av-enues for attack.
■ And, for good-ness' sake, install some firewalls.

Ken van Wyk, CIO at the secur-ity services firm Para-Protect Inc. in Alexandria, Va., spent eight years working in academia. "I do not know of a single university that is running a firewall on its campus net-work," he says. "In the busi-ness world, that would be unacceptable."

The ISP Layer

Internet service providers need to do the following:
■ Monitor for severe vari-ances in traffic going to business clients, then alert those clients and block traf-fic if it reaches suspicious levels, says Johnson.
■ Put filters on the routers monitoring traffic from oth-er providers to detect spoofed IP addresses and block unusually large traffic loads, adds Zepp.
■ Sharpen response time, adds Brian Koref, senior security engineer at Conx-ion Corp., a business Inter-net provider in San Jose.

ISPs need a clear path of communication to the secur-ity administrator at upstream Internet providers in an ef-fort to trace the attacker's IP address to its origin during an attack.

Good news: About 23 ISPs (Comstar included) have joined Reston, Va.-based ICSA.net's Internet security alliance (*www.icsa.net/html/communities/ddos/alliance/index-shtml*), whose members pledge to work together to defend against DDOS attacks.

The Victim Web Site Layer

To defend your Web site, Meta's Johnson says you should create a contingency plan that can put you back online in 10 or 15 minutes instead of two hours. This should include ways to quickly determine if you're under attack and identify who's responsible for countermeasures.

Web sites also need fail-over servers and Internet connections to take over from those overwhelmed by an attack, Johnson adds.

But Koref says it isn't easy to build a fail-over system that won't route the attack along with legitimate traffic. (Some companies establish connections with multiple Internet service providers so they can route traffic away from the ISP being attacked.)

Instead, Koref suggests addressing these vulnerabil-ities at the server by limiting the number of connections to a box and limiting the amount of time a TCP ses-sion remains unfulfilled. (The traffic used in a denial-of-service attack opens ses-sions with the server but doesn't complete them, leav-ing the server idle and un-able to accept other traffic.)

One way to do this is to click the properties tab "SYN defender" for a CheckPoint firewall. This will automatically reset SYN packet connections if they go unanswered for more than a few seconds.

Build up your outer wall of defensive routers. Most e-commerce businesses have one or two routers be-tween their Web servers and the Web. Johnson recom-mends fronting each of these routers with four or more inexpensive routers to reduce the choke point if packet snowstorms hit.

Between all these routers and the Web server, install multiple intrusion-detection systems, says Johnson.

And as Zepp says so eloquently: "If you are going to conduct business on the Internet, you must assume that you will be DOSed off the network at some point in time."

Which leads me to my last word on this subject: *policy.*

Nothing will happen with-out a solid, enforced secur-ity policy. Every organiza-tion, whether it's a potential victim, an ISP or an unwit-ting co-conspirator, is toast without one. ▶

Deborah Radcliff is a freelance writer in Northern California. Contact her at drad@aol.com.

AT A GLANCE

How to Fight Denial of Service

Steps to take at the Web servers hit by attacks, at the Internet service providers who funnel traffic to those servers and at the "zombie" machines used to launch the attack.

At the zombie machine: Set and enforce security policies. Scan regularly for Trojans and vulnerabilities. Close unused ports. Remind users not to open .exe mail attachments.

At the ISP: Monitor and block traffic spikes. Filter spoofed IP addresses. Coordinate security with network providers.

At the victim Web site: Create backup servers and network connections. Limit con-nections to each server. Install multiple intru-sion-detection systems and multiple routers for incoming traffic to reduce choke points.

TECHNOLOGY

From the Forums: Slow Start for Windows 2000

For some, migration to the new system has been a breeze – for others, well . . .

BY CYNTHIA MORGAN

THE BUZZ ON *Computerworld*'s community forums is all about Windows 2000 these days. Should corporations migrate, and if so, when? And already a few knotty problems have cropped up with popular applications and hardware.

If you haven't checked out the forums yet, sign in and ask some questions. If the editors at *Computerworld* and your peers can't supply the answers, we'll go straight to the source.

FORUM FEEDBACK
www.computerworld.com/forums

To Migrate . . . or Not to Migrate?

The opinions from forum participants are running at a ratio of about 2-to-1 against immediate migration. Some users say they aren't moving because Windows NT suits their needs and Win 2k currently offers no compelling attractions. Others have started the migration and are thrilled. The following is a sampling:

"We are in the midst of an NT-to-Linux conversion on our servers. . . . A year ago, the big topic of computing was, 'How do we keep the servers from crashing?' Today, it's, 'What else can the servers do?' What a change an [operating system] makes."
Matt Hall
Information systems project leader
Giant Industries Inc.
Scottsdale, Ariz.

"Like most [people], I have chosen not to fix what ain't broke. I find my NT 4 systems to be rock solid so far. On the other hand, I just happen to be needing a new server for my company. I wanted to use Win 2000 for this one, since most of the load will come after the project's beta phase, giving me plenty of time to love it or leave it. I also feel a bit safer buying the server with [Windows 2000] in mind, just for proven hardware compatibility."
Anonymous
Los Angeles

"My main concern is the huge amount of information I've read about incompatibilities with Win 2k clients and non-Win 2k servers. How do you convert a large organization (750 machines scattered across the state of Montana) in any reasonable time frame?"
Chuck Jagger
Enterprise network architect
Blue Cross/Blue Shield of Montana
Helena

"As much as I personally like [Win 2k], for the next several months my life will continue to revolve around developers and vendors as we work out our proprietary kinks. By the time we are ready, [Service Pack 1] should be out, and we will begin migration at that time."
Anonymous
Systems integrator

Compatibility Woes

Some readers who have started using Win 2k say they are encountering compatibility problems they hadn't reckoned on. Sybase Inc.'s SQL suite has some serious connectivity "gotchas," for example.

We queried Microsoft Corp. and Emeryville, Calif.-based Sybase to find out what the problem was and when it's likely to be fixed. We haven't received an answer from Sybase.

Microsoft responded: "Sybase is currently not compatible with Windows 2000."

On the hardware side came the following comment from a forum visitor:

"On the mobile PC, I have random responses on the PCMCIA modem cards. For some reason . . . Win 2k was changing my port number for my modem, and the modem stopped responding. After this, the PCMCIA slots were unusable, and W2k had to be reinstalled. Use caution if you think you want to purchase [Win 2k]."
Anonymous
Telecommunications engineer
Teltrust Inc., Salt Lake City

Some forum participants reported they had used Microsoft's Readiness Analyzer, a utility that checks PCs for potential Windows 2000 incompatibilities, before installing the new operating system. The utility apparently failed to pick up most of the problems that subsequently occurred.

We checked with Microsoft to find out what happened. "The Readiness Analyzer does not provide information on all existing hardware and software you might be running on your system," a spokesman said. He suggested checking

> How do you convert a large organization in any reasonable time frame?
>
> CHUCK JAGGER, ENTERPRISE NETWORK ARCHITECT, BLUE CROSS/BLUE SHIELD OF MONTANA

Microsoft's Hardware and Software Compatibility Lists for more accurate information. Some of the products we needed to check weren't on either list, in which case Microsoft recommends dealing directly with the manufacturer.

If that's the case, one forum participant argued, you could save time by ditching the utility and the lists and going straight to your manufacturer for the real scoop.

DVD Compatibility

One bright note: Mark Wisely, a laboratory administrator at John Deere Information Systems in Moline, Ill., reports that he has been able to overcome possible DVD compatibility troubles with shareware. "PowerDVD is the program we have used. It's customizable and works well with Windows 2000." It can be downloaded from (*www.cyberlink.com.tw/english/products/powerdvd.asp*). ▶

BRIEFS

Broadcom Buy

High-speed chip maker Broadcom Corp. in Irvine, Calif., has announced its acquisition of Digital Furnace Corp., a software communications technology company in Atlanta.

Broadcom hopes the $136 million stock deal will improve the speed and capacity of Broadcom's broadband offerings. Broadcom plans to use Digital Furnace's patent-pending Propane software, which runs on Broadcom's chip sets and speeds Web-page loading by reducing latency and improving efficiency in existing broadband networks.

E-Commerce Apps

Lawson Software Inc. in St. Paul, Minn., has expanded its line of e-commerce applications with six new products, including an online auction system and tools for building Web storefronts that link to its back-office business applications.

Lawson didn't disclose pricing for the new applications, which are available now as part of Lawson's Collaborative Commerce Suite. Lawson said 12 customers have installed pieces of the suite since it was announced last fall.

Active Buys TransLink

Active Software Inc., a Santa Clara, Calif.-based vendor of application integration tools, recently announced plans to buy TransLink Software Inc. in Bellevue, Wash., for $75 million in cash and stock. TransLink makes software that ties mainframes to Web-based applications and other systems. Active also announced an XML-based Internet gateway server that can integrate systems running at different companies. Pricing will start at $125,000 for the server, which is due in the second quarter.

PeopleSoft Plans Consulting Apps

PeopleSoft Inc. in Pleasanton, Calif., has announced plans to ship two new management applications for companies that do consulting work and offer other professional services. The first handles contracting, and the second automates the process of assigning consultants to projects. PeopleSoft didn't disclose pricing on the new software, which is due to ship by midyear as part of an upgrade of PeopleSoft's enterprise resource planning system.

Overland Data To Debut SAN App

This month Overland Data Inc. will introduce SANPiper, a SCSI-to-Fibre Channel bridge for storage-area networks (SAN). The SANPiper will be available in two models: the 400, which will offer one or two Fibre Channel ports and two SCSI connections, and the 1000, which supports six Fibre Channel connections and four SCSI ports.

Both SANPiper models are available in rack-mount and tabletop configurations. Pricing begins at $7,295.

Quantum File Server

Quantum Corp.'s DLT and Storage Systems Group has started shipping the Snap Server 4000, a workgroup file server. Features include RAID 5 compliance, cross-platform file-sharing support among Windows, NetWare, Macintosh, Linux and Unix, and up to 120GB storage capacity. The Snap Server 4000 costs approximately $2,999.

AOL Signs Deals With Six Wireless Device Makers

BY NANCY WEIL
BOSTON

America Online Inc. last week said it has signed deals with six makers of mobile devices, with the intent of expanding wireless access to AOL services.

The deals, part of the company's "AOL Anywhere" strategy, are with Sprint PCS Group, Nokia Corp., Motorola Inc., Research In Motion Ltd., BellSouth Corp. and Arch Communications Group Inc. The following details were outlined in a statement released last week by AOL:

■ Mobile telephones from Sprint PCS that offer U.S. users Internet access will receive AOL content and services under the AOL Wireless initiative. Sprint PCS is the wireless service provider division of Sprint Corp. in Westwood, Kan.

■ Finland-based Nokia and AOL will develop a version of the AOL Instant Messenger (AIM) chat service for Nokia wireless handheld devices.

■ Motorola in Schaumburg, Ill., will offer access to AOL Mobile Messenger services via a number of its wireless devices.

■ AOL will use the BellSouth network in its new Mobile Messenger service and also intends to provide AOL e-mail and AIM to users of BellSouth Intelligent Wireless Network-enabled services. BellSouth is based in Atlanta.

■ AOL Mobile Messenger will be offered through a customized, AOL-branded handheld device from Research In Motion, a wireless provider based in Waterloo, Ontario.

■ Arch Communications devices will offer two-way wireless messaging for the new AOL Mobile Messenger service. The company will also offer AOL e-mail and AIM to users of devices that have Arch messaging capabilities. Arch Communications is located in Westboro, Mass.

AOL didn't say when the new devices would be available but noted in the statement that research indicates that about 70% of households with AOL subscriptions also have a cellular telephone, a pager or both.

In a statement that was released separately, Nokia said its devices that will support AIM access should be available in the second half of this year. ▶

Nancy Weil writes for the IDG News Service in Boston.

SuSE, Silicon Graphics Plan to Bring Clustering Software to Linux

SGI application to be available for Linux soon

BY DOUGLAS F. GRAY
HANNOVER, GERMANY

Silicon Graphics Inc. and German firm SuSE Linux AG have agreed to jointly bring to market clustering software for the Linux operating system, the two companies announced last week.

The joint engineering project will bring SGI's Iris FailSafe high-availability clustering software to Linux environments, company officials said here at the CeBit information technology show.

With Iris FailSafe running on Linux, Linux users will be able to link two or more servers together so one will automatically take over if another should fail. SuSE officials said they hope the release of the clustering software will lead to more mission-critical applications becoming available for Linux.

The announcement doesn't mean that SGI will stop working with Microsoft Corp.'s Windows NT and its own Irix Unix operating system, said Joachim Redmer, managing director of Silicon Graphics GmbH in Germany.

"We're not abandoning [NT and Irix Unix]. We can now focus on three branches of operating systems," Redmer said. He added that SGI will release FailSafe's source code under the general public license soon after the project

> ## We're not abandoning [NT and Irix Unix]. We can now focus on three branches of operating systems.
>
> **JOACHIM REDMER,**
> **MANAGING DIRECTOR,**
> **SILICON GRAPHICS GMBH**

begins, so the Linux community can also modify the code.

Mountain View, Calif.-based SGI also confirmed that it has other Linux applications currently in development, including high-performance compilers for the open-source operating system.

Officials at both companies said that SGI and SuSE hope to have the Linux version of the clustering software completed in the second half of this year. ▶

Gray writes for the IDG News Service's London bureau.

TECHNOLOGY

Sybase to Launch SQL Anywhere Studio 7.0 Next Month

Release aims to ease wireless data exchange

BY MARY LISBETH D'AMICO
HANNOVER, GERMANY

Sybase Inc. has detailed features of the latest release of its mobile database product, SQL Anywhere Studio 7.0, which will be available next month.

SQL Anywhere Studio 7.0 lets users create and deploy mobile computing applications, enabling them to exchange data between corporate systems and remote devices such as handheld computers or mobile phones.

The enhanced version of the product was designed to meet soaring demand for mobile computing applications that tap into corporate data, said Tobias Philipp, business development manager for Sybase GmbH's mobile and embedded computing division in Germany, in an interview here at the CeBit information technology trade show last week.

The model of computing via mobile phones that's currently being propagated by phone manufacturers leaves something to be desired, Philipp said, because the companies always expect users to be connected to the Internet to get information.

"Our vision is to have people online connecting to central systems but with a local data store," said Philipp.

SQL Anywhere Studio was designed to address this issue, he said. For example, user addresses can be stored locally in a minidatabase on a mobile phone. Doing so makes the application run more efficiently, Philipp said, because

users don't have to download unnecessary information, which improves data processing speeds.

SQL Anywhere Studio 7.0 was designed to be easier to administer than its predecessor and lets users synchronize information in both directions between remote devices and standard back-end enterprise database systems, including those from Sybase, Oracle Corp., IBM and Microsoft Corp., according to a statement released last week by Emeryville, Calif.-based Sybase.

It also supports multiple communications protocols, including those for the Internet, wireless applications and e-mail, and offers 128-bit encryption technology, enabling secure data synchronization, Sybase said.

Other enhancements include new dynamic cache sizing and improved indexing features, Sybase said.

Selling Points

Features designed to make life easier for developers include Version 7.0's new native OLE database driver, which allows the applications to access data residing in Microsoft applications.

New administration features include new task-scheduling and event-handling capabilities and a tool that incorporates support for Java, Sybase said.

SQL Anywhere Studio 7.0 can also be deployed on devices with VxWorks, an operating system from Alameda, Calif.-based Wind River Systems Inc. Sybase and Wind River have formed a strategic partnership to work at improving links between embedded database devices — such as set-top boxes, office equipment and consumer appliances — and central databases.

Sybase has also extended Java support in Version 7.0 to enable developers to create applications for handheld devices in Java, as well as for the MS-DOS operating system, targeting the industrial handheld market, the company said.

The release costs $399 for one user and $999 for 10 users. ▶

D'Amico writes for the IDG News Service in Munich, Germany.

SNAPSHOT

Linux Use Explodes

Four hundred information technology and development managers were asked whether they expected to launch Linux applications during the next year and whether they were already running Linux on any of their servers:

EXPECT TO LAUNCH LINUX

29.0%

16.5%

RUNNING LINUX ON SERVERS

34.2%

17.5%

■ MAY 1999   DECEMBER 1999

SOURCE: EVANS MARKETING SERVICES, SANTA CRUZ, CALIF., FEBRUARY 1999

Jack of All Trades, Master of Many

Dreamweaver/Fireworks combination is a serious tool for collaborative Web site design. By Cynthia Morgan

REPORT CARD

PRODUCT
DREAMWEAVER 3 AND FIREWORKS 3 STUDIO
Macromedia Inc.
San Francisco
(415) 252-2000
www.macromedia.com

BOTTOM LINE: High-level Web site development tools that combine intuitive design with unheard-of flexibility

COMPETES WITH: Adobe's GoLive, Microsoft's FrontPage

PLATFORMS: Power Macintosh, Windows 9x, Windows NT (not certified Windows 2000-compatible, although the company says there have been no known problems using either program with Windows 2000 betas)

COST
$399 *for DW3/FW3 Studio*

- - - - - - - - - - - - - - - - - - -

DREAMWEAVER 3
PROS ⊕

One of the most flexible — and extensible — interfaces of any software program
■ Excellent automation and collaboration tools
■ Near-intuitive design capabilities

CONS ⊖
No zoom function, which can make precise element placement difficult

FIREWORKS 3
PROS ⊕
Especially well-adapted for Web work, with many Photoshop-like features and tools
■ Accepts Photoshop files, plug-ins

CONS ⊖
Saves only in PNG format; if you want JPEG, GIF or TIF, you'll have to use the export function

OVERALL GRADE A-

OVERALL GRADE B+

"INTUITIVE WEB DESIGN TOOL" is an oxymoron we just can't afford anymore.

In the days when two geeks could spend weeks arguing over whether or not to use frames, maybe it made sense to design Web sites using the technological equivalent of writing on wet tissues with a crayon, i.e., the classic HTML editor. Now, when companies bet millions of dollars that their Web sites will be more attractive and faster than those of their competitors, it's time to get serious. For my money, Macromedia Inc.'s Dreamweaver is serious stuff. The fact that it's also a pleasure to use is simply icing on the cake.

I've been building sites with the San Francisco-based company's latest version, Dreamweaver 3, which comes bundled with Macromedia's Web graphics tool, Fireworks. Fireworks has a lot of the same features as category leader Photoshop from San Jose-based Adobe Systems Inc. It works with Photoshop plug-ins and extensions, optimizes GIF and JPEG files for fast display and can perform detailed touch-up on original and imported artwork. Better still, it can accept Photoshop, Adobe Illustrator and Macromedia Freehand files, and those files will remain editable.

Fireworks also gives you the ability to perform repetitive tasks, such as resampling an image or changing palettes in batch mode. And unlike most imaging packages, it lets you build, test and edit the code for rollovers, image swaps and other interactions as you're building the graphics. The program integrates well with other Macromedia tools such as Flash and Director, but it is just about seamless in its cooperation with Dreamweaver.

But the real breakthrough here is Dreamweaver. In Version 3, Macromedia developers have obviously given a lot of thought to how Web pages are created; they've built in several features that overcome some of the more irritating routines. For example, there's a command to clean up the bulky, sloppy HTML generated by Word from Microsoft Corp. Since Word is probably the most common way to produce Web text, this step can be a real time-saver. The program has also added explicit commands to work with e-mail and image albums and overcome the layer display problems in the Netscape browser.

Version 3 also introduces QuickTag, Dreamweaver's code-revealing HTML editor. Select an element, press Control-T, and you can see and edit its HTML code without exiting to an edit window. The program drops context-sensitive hints as to what code can be edited — and how. There's a fully interactive HTML editor as well.

Dreamweaver's preferred design mode uses layers similar to the frames used in desktop publishing packages. You draw a layer, then insert text, graphics or a table. Layers can move freely across the page. That's a pretty radical departure from the table-based grid system used by most Web layout tools, including Adobe's GoLive. Since layers upset 3.x Web browsers, you can convert layers to conventional HTML tables, albeit somewhat tediously.

Supporting the User and Team

Dreamweaver spits out dialog boxes and requests to save at just about every turn. Until you get used to it, the handholding can get on your nerves. On the other hand, I'm making fewer mistakes that need correction after the preview.

Dreamweaver understands that corporate Web teams are just that: teams. It supports the addition of time-stamped design notes in an XML file that stays with the page and can be shared across the network. I used to keep a notebook just to jot down notes on color codes,

element size and so on; now I do the same thing on the page.

Dreamweaver files can be checked in and out, and the program's libraries and page collections can be synchronized with the server in just a few mouse clicks in GoLive-like fashion. And a single change to the template can propagate throughout the Web site automatically. That sort of power means you'll have less trouble making minor tweaks to a site as necessary, in Web time.

If that's all these two programs did, that would be enough to put the Dreamweaver Studio at the top of the design heap. But the program is extensively customizable. Templates can be locked so users can edit some elements without disturbing others. You can add and subtract program capabilities with JavaScript and the content-tagging language XML so that your users see only the tools they're permitted to use.
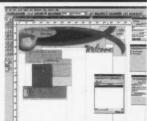
Dreamweaver's history palette provides a running tab on all keyboard commands made since the start of a session and lets you backtrack and erase your actions. You can add segments of the history as a new Dreamweaver command on the menu, which is great for automating repetitive tasks. Unfortunately, it doesn't work with mouse-driven commands such as selection, which may limit its usefulness.

The program offers support for cascading style sheets and is flexible about accepting HTML commands specific to certain Web development tools. Unlike GoLive, whose Macintosh and Windows versions have trouble communicating, the Macintosh and Windows versions of Dreamweaver swapped pages with nary a hitch.

The Dreamweaver 3/Fireworks 3 package sells for $399. The program isn't perfect. Despite its extremely precise layout capabilities, Dreamweaver lacks a zoom mode to see that precision up close. And its habit of cluttering the landscape with menus is annoying; I'd much prefer a single, tabbed toolbox. But I'll put up with those irritations for a Web design tool this intuitive. ▶

DREAMWEAVER puts a powerful array of tools at your command in separate windows, although the sheer number of windows can make a confusing clutter on smaller screens

FIREWORKS lets you add JavaScript code and behaviors directly in the program. Once created, you export elements as "slices," indicated by the green boxes. The slices can be reassembled within Dreamweaver

Server Partitioning

BY JAIKUMAR VIJAYAN

SERVER PARTITIONING offers a number of distinct advantages to information technology departments. For one thing, it allows systems administrators to consolidate multiple applications into one physical server box, which helps to centralize management, save space and potentially lower administrative and management costs.

Partitioning is also advantageous in multitier application environments, such as enterprise resource planning or data warehousing, where the applications are often functionally divided across multiple desktop clients, application servers and database servers.

Partitioning technologies allow administrators to host these applications on different partitions within a single server, thereby improving performance.

Implementations of partitioning — and even its definitions — vary widely among computer hardware vendors.

Let's Get Physical

Some vendors implement physical partitions, where resources are divided along hardware boundaries. Others use a more software-oriented — or logical partitioning — approach. And some use a bit of both.

Physical partitioning in-volves the ability to take a single large server and divide it into multiple smaller systems, with each partition running its own copy of the operating system. Each partition acts as a physically independent, self-contained server with its own processors, memory, input/output subsystem and network resources.

The boundaries can be reset at any time. This once required users to bring the system down, but it can now be done while the network is running.

Is This Logical?

Software-based, or logical, partitions are more flexible because the boundaries between them aren't physically defined. In theory, at least, a single processor can be divided among multiple logical partitions, or resources such as memory and disks can be shared dynamically between partitions.

This flexibility allows applications to maximize the use of total system resources as needed instead of being confined by physical boundaries.

Partitioning technology has been around for a long time in the mainframe space, but it started to gain attention in the distributed client/server arena only in the past two years or so. The trend toward server consolidation has driven much of that interest.

"Companies are trying to re-centralize their servers because they are finding it hard to manage their servers," says Tony Iams, an analyst at D. H. Brown Associates Inc., in Port Chester, N.Y.
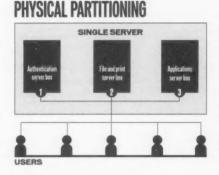
"IT organizations are trying to reorganize how they manage their resources and are, to a certain extent, trying to undo the distributed-server deployments" of previous years, says Jean S. Bozman, a server analyst at International Data Corp. in Mountain View, Calif.

Partitioning allows companies to consolidate the work previously done by multiple independent servers, including

> IT organizations are trying to reorganize how they manage their resources.
>
> **JEAN S. BOZMAN, ANALYST, INTERNATIONAL DATA CORP.**

DEFINITION
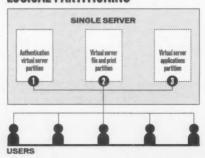
Server partitioning is the ability to logically or physically slice up the resources of a large server into two or more separate entities so as to distribute those resources optimally among multiple applications running on the server.

Whether physical or logical, server partitioning makes one machine look and act like several. This configuration sleight of hand allows network administrators to simplify their jobs while using their network's resources more efficiently.

PHYSICAL PARTITIONING

SINGLE SERVER

Authentication server box   1

File and print server box   2

Applications server box   3

USERS

LOGICAL PARTITIONING

SINGLE SERVER

Authentication virtual server partition   1

Virtual server file and print partition   2

Virtual server applications partition   3

USERS

different types of workloads, onto a single server, Bozman adds.

The highest level of sophistication has been achieved by IBM with the logical partitioning (LPAR) technology found on its System 390 mainframes, Iams says.

Sun Microsystems Inc. has been a leader among Unix system vendors in driving the use of partitioning technologies in distributed computing. The company's Dynamic Systems Domain capability combines hardware- and software-based techniques to help administrators partition high-end E10000 systems into 16 separate segments.

Sun's technology allows systems administrators to automate the process for resetting partition boundaries and re-allocating resources as necessary.

Another example is IBM's midrange AS/400 server, which uses an adapted version of LPAR technology to offer a similar capability.

Dynamic Partitioning

Compaq Computer Corp. is preparing to launch later this year a new Unix server that will offer dynamic hardware partitioning for workload management and server consolidation. Users will be able to create, resize or delete partitions without rebooting.

Such features will allow administrators to quickly allocate additional resources to applications — say, to handle a sudden spike in Web server traffic — without serious disruptions.

Other vendors offering Unix partitioning capabilities include Unisys Corp. in Blue Bell, Pa., and Sequent Computer Systems Inc., an IBM subsidiary in Beaverton, Ore.

Both companies offer partitioning capabilities that allow administrators to run different operating systems within the same box — for instance, with Windows NT running on one partition and Unix running on another. ▶

■ *Are there technologies or issues you would like to learn about in QuickStudy? Please send your ideas to quickstudy@computerworld.com.*

FEB. 23, 1993. Brokerage workers at the bombed-out World Trade Center in New York carried wastebaskets stuffed with order tickets down 90 flights of smoke-filled stairs. Only the previous day's transactions had been entered and backed up in the company's computer systems, so without those tickets, a day's business would have joined the terrorists' casualty list.

That's how precious up-to-the-minute data can be in a fast-moving operation, says Jim Manias, a vice president at Advanced Systems Concepts Inc. in Hoboken, N.J.

In a time when customer call records are worth their weight in gold, data recovery is no longer a matter of following a regular backup regimen and occasionally grabbing an off-the-shelf utility to recover files from a trashed hard drive. Today's data managers emphasize redesigning storage systems to make data restoration faster, more reliable and more complete. Along with this comes extra planning, often extra service and additional personnel and infrastructure costs.

These days, data recovery systems are typically grouped under a new functional heading: business continuity. Their purpose: Make a copy of mission-critical data available at the speed needed to avoid business losses and at a cost commensurate with the data's value. Analysts say an effective recovery plan must examine business processes to identify the data that's minimally necessary for staying operational, how long that data can be unavailable without affecting customers and which applications are needed to access the data conveniently.

The demand for fail-safe data recovery appears to be largely a response to the increase in around-the-clock commerce and the sheer amount of data being generated. According to "The Cost of Lost Data," a 1999 study conducted by Pepperdine University professor David Smith for enterprise storage vendor Legato Systems Inc., U.S. companies spent $11.8 billion to recover data during the previous year. In any given year, 6% of PCs will suffer serious data loss, usually because of human error, hardware or software failures or viruses, according to the study.

While the risk may be growing, not enough companies have business-continuity plans and procedures in place, according to surveys commissioned by Comdisco Inc., a vendor of such plans. According to its most recent Vulnerability Index released in November, 33% of 200 large organizations and government agencies said they lack disaster plans, a decrease of 45% from two years earlier. Comdisco found Internet-dependent companies especially vulnerable to data loss and system downtime.

The best, but most expensive, option is to run a mirror site that contains copies of applications and data, perhaps located at the other end of a leased line miles away from the main site, where a natural or man-made disaster is unlikely to strike simultaneously. Mirror sites are becoming more popular with high-volume e-commerce sites that can't risk even a few minutes of botched transactions and dead Web links. They can take over in seconds when equipment goes down.

Cheaper alternatives include shadowing, or replication, software like Remote Shadow from Advanced Systems Concepts and add-on software sold by enterprise database and storage-area network vendors. Shadowing captures drives' disk-write operations and sends them over remote links to drives at a second site. Another option, server clustering, either disperses the processing load so if one server fails, another can take over, or keeps mirrored servers running in parallel, making switchover nearly instan-

New technologies, enlightened adr
fashioned luck can keep your comp

Data Rest

TECHNOLOGY

Overcoming Earth, Wind and Water To Keep Data Safe

Word came early in the evening on May 3, 1999: An F5-level tornado – the deadliest kind, with winds that exceeded 260 miles per hour – had hit Oklahoma City. Kevin McDonald, director of information services at Tontitown, Ark.-based PAM Transportation Services Inc., feared the worst. Oklahoma City housed PAM's truck terminal and the dispatch center for the company's subsidiary, Choctaw Express Inc. McDonald had to keep that center up and running.

So he sent a damage-assessment team from Arkansas. The team arrived to find Oklahoma City a mass of debris and devastation. Although the twister barely kissed the dispatch center grounds, coming only within 200 yards of the metal-frame building, it had wreaked havoc.

Most of the contents, including some PCs, had been sucked out of the building. A diesel truck was hurled a half-mile away. Trailers exploded from the air-pressure changes. Windows were blown out of the office, and rain had drenched much of the electronic equipment. Fortunately, no employees were hurt: They had waited out the storm huddled in the long, narrow, 4-ft.-deep grease pits used to service trucks.

The team wrapped up the communication equipment to protect it from rain. McDonald called SunGard Recovery Services Inc. in Wayne, Pa., and formally declared a disaster under the terms of PAM's service agreement.

ministration and just plain old-

pany's data alive. By David Essex

urrection

Data Resurrection

taneous. Traditional backup and restoration systems require a much longer turnaround, though vendors like EMC Corp. sell hardware and software that boost tape's effective transfer rate, driving recovery times down to a few hours for even large databases.

Generally, the cheapest recovery is achievable with traditional data recovery tools like Symantec Corp.'s Norton Utilities and PowerQuest Corp.'s Lost and Found. They remain important lifesavers in many companies. Still, recovering data with such utilities can be slow, tedious and frequently unsuccessful, so many companies outsource the job to specialists like Ontrack Data International Inc., Data Recovery Labs and DriveSavers Data Recovery.

Some outsource the entire process, from planning to hardware installation to recovery. Three main vendors compete in this market: Comdisco Continuity Services, SunGard Recovery Services Inc. and IBM Business Continuity and Recovery Services. All offer yet another continuity option: mobile recovery trucks that can bring your data, and the hardware and applications needed to access it, to your door.

Outsourcing has recently taken another turn toward network storage centers that keep backups handy at the end of a high-speed data link. These "storage utilities," or storage service providers, were pioneered by Storage Networks Inc., says Rick Miller, an analyst at Cahners In-Stat Group in Newton, Mass. "You're pretty much guaranteed to never lose a single byte of data," he says. "Because bandwidth is becoming more economical, it's feasible for smaller companies to have a high-speed connection to a data center."

Storage service providers can help cut management and maintenance costs, which account for nearly 50% of the average company's storage outlay, by spreading personnel and resources over multiple customers' data, Miller says. ◗

Essex is a freelance writer in Antrim, N.H.

Certifiable Customers

THE COMPANY: Verisign Inc., a Mountain View, Calif., supplier of online digital certificates, with 400 employees.

THE DATA PROBLEM: Verisign servers must be available around the clock to handle requests for certificate authentication from customers who need such approvals to offer secure transactions at their Web sites. Corporate customers such as Ford Motor Co. and Hewlett-Packard Co. buy groups of certificates for internal security.

Reliability is mission-critical. "I think we realized it was a requirement of doing business," says John Ferguson, Verisign's director of production services. "Companies are outsourcing a part of their IT business to us," so strong assurance of around-the-clock availability "is critical to getting them to sign a contract," he says. In fact, it's specified in service-level agreements.

THE SOLUTION: A "hot site" at an undisclosed East Coast location maintained by Comdisco Continuity Services provides the duplicated data and systems Verisign would need to stay online in case a disaster hit Mountain View. An Advanced Recovery Site (ARS) — actually a 215-sq.-ft. caged area at Comdisco's site — stores relevant data and what Ferguson calls "long lead-time" services: Internet service provider connections and links to merchants that would be hard to quickly restore. "It's a scaled-

CASE STUDIES

down, more consolidated view of our services," he says. An Oracle8.15 utility writes database transaction logs to the ARS, and NSI Software's Double-Take replicates only the data that has changed, saving on network bandwidth costs.

Staff at a nearby Verisign office were trained to perform the company's elaborate "key ceremonies" and other security safeguards. Comdisco also maintains a site that could take over Verisign's customer-service functions.

"It's not an instant recovery," Ferguson says. "There is an element of manual changeover."

THE RESULTS: After a monumental effort to set up the admittedly complex operation, Verisign hasn't had to use the ARS. "But I think we can sleep at night," Ferguson says.

Deloitte Fights Drive Crashes in Big Notebook Fleet

THE COMPANY: Deloitte & Touche, a Big Five accounting firm based in New York.

THE DATA PROBLEM: Senior PC LAN Technician Gino Ahn manages data recovery services for the firm's 3,500-plus notebook PCs, many of which hold hard-to-replace accounting information collected at client sites and entered in customized auditing

software with complex links to Microsoft Excel spreadsheets. About every three weeks, a laptop (usually a standard-issue Toshiba Tecra 8000) has a data recovery problem that Ahn is called on to solve. "It's usually the hard drive that goes bad," says Ahn, adding that desktop drives fail at a much slower rate of approximately one per year.

THE SOLUTION: The company has a service contract with Ontrack Data International. Ontrack charges $500 to $1,500 to recover data from drives shipped to its laboratories. Estimates cost approximately $100.

"Before they proceed with any recovery, they get back to us with costs and a list of the data that can be recovered," Ahn says.

Rescued files are returned within days on CD-ROMs shipped via overnight mail. Deloitte's information technology staff must then reintegrate the files, which depend heavily on a special index file and linked libraries for their operation.

THE RESULTS: "There are some occasions where the data can't be recovered," Ahn says, but at least two-thirds of the time, the paying department opts for a full recovery effort, and 80% or more of the data is typically recovered.

Ahn says that in addition to saving in labor costs that would have been spent recreating the data, an accountant's sanity is often rescued. One recently needed a two-day turnaround to get data back in time for the weekend, when he planned to work feverishly to meet a deadline. Ahn says the $4,000 bill was worth every penny. — *David Essex*

Keep Data Safe

SunGard contacted its Metro Recovery unit in Atlanta and sent a truck loaded with basic equipment configurations previously specified by PAM on the nearly 900-mile journey to Oklahoma City.

PAM called Little Rock, Ark.-based Alltel Corp. and purchased a duplicate phone system. A local interconnect company shipped it to Oklahoma City. In the meantime, incoming phone calls were routed to PAM headquarters.

When the maintenance director used a generator to restore power, McDonald discovered he was luckier than he originally thought: The office's frame-relay link, router and phone system still worked. But that didn't mean everything was back to normal. "The building was unusable," McDonald says. "There was no way anyone could work in there."

SunGard's Metro Recovery people arrived around 4 p.m. the day after the tornado, and "they basically picked up everything," McDonald says.

By 6 p.m., a bit more than 24 hours after everything was blown to pieces, the system was fully restored, and the dispatch center was back online.

Except for some initial confusion, McDonald says PAM's workflow was never seriously disrupted. That's largely because within an hour of the strike, PAM's in-vehicle satellite messaging and tracking system notified drivers that it would handle dispatching while Oklahoma City was down.

One factor, McDonald says, must be added into the disaster preparedness equation: Don't overlook the human element. When visualizing recovery scenarios, realize that employees may have overwhelming personal obligations to help family and friends during catastrophes, and that will limit the ability to staff a backup site internally.

Sharon Savings Bank wasn't as lucky last September. One of its bank buildings in Darby, Pa., sits next to a creek that was flooded by Hurricane Floyd's torrential rains. "It kind of took us by surprise," recalls network administrator Shirley Martin. "We didn't have much time to get outside ourselves."

The next day, workers found 8 feet of water in the building. Twenty-two PCs were smashed to the floor by raging floodwa-

ters. A nearby administrative building was also out of commission, so workers in Martin's building had to set up shop in a nearby mortgage office.

The most critical data was safe: The bank's main database was kept off-site at an Electronic Data Systems Corp. division in Florida. But important documents, policies and account balances created in Microsoft Office and specialized applications were on the hard drives of the lost PCs.

Paper copies and tape backups (the latter stored in a bank vault) weren't viable restoration sources, so Martin asked her local maintenance contractor to remove four soggy hard drives and gauge the odds of data recovery. The flood had deposited caustic substances on the drives, so the consultant recommended sending them to Ontrack Data International, where technicians in "clean rooms" could safely remove the drive's magnetic platters and use special instruments to read the remaining data.

Over the next two weeks, Ontrack shipped back CD-ROMs containing nearly all the original data. "I'd say it saved us about three or four months worth of overtime work," Martin says.

– *David Essex*

Virtual Private Networks Made Easy

*Start-up VPNX.com promises to make
secure VPNs as simple as a phone call*

BY STEVE ULFELDER

A LARGE enterprise resource planning software vendor discovered that its archrival had jacked into its last four online conferences.

Ouch. Chalk up another customer for VPNX.com Inc.

VPNX.com sells secure virtual private networking as a service built on the fly. The idea is to let companies with incompatible virtual private networks (VPN) communicate over the Internet securely. If your organization has an on-line conference planned for to-morrow outside the firewall, you can call VPNX.com today.

The Redwood City, Calif.-based company will build you a private, secure network for the meeting and tear it down afterward. All you have to do is sign the purchase order. The company's biggest hurdles may be convincing large information technology shops that the idea works and preventing big telecommunications companies from copying the idea.

Fortune 500 companies want security, but they're not always willing to do a lot to ensure it. Solid network security requires a big initial investment, as well as expertise in authentication and VPN technology. Moreover, IT is appropriately skeptical about plunging a lot of resources into a changeable technology that lacks standards.

According to Michael Howard, principal analyst at Infonetics Research Inc. in San Jose, "Today, in order to set up secure connections, you have to go through a lot." He says companies must "use a leased line, or both be on the same frame-relay service or somehow set up a private net between the two businesses."

What large companies want, says VPNX.com President and CEO Tyrone F. Pike, is "secure webtone" — as well as bullet-proof security for Internet communications that's provided transparently on demand, with no performance penalty.

The key is VPNX.com's real-time event-based service management. "They're making some pretty complex stuff seem simple," Howard says.

Naturally, performance is a major concern at large IT shops that are mulling over signing on with VPNX.com. "You need to prove you're not slowing them down," Pike says.

Joseph J. Ekstrom, VPNX.-com's chief technology officer, says drag is minimal because "actual bandwidth is becoming less of a constraint" at most shops.

Under VPNX.com, he says, "all the IPSec [activity] is taking place in our tunnel termination equipment. So it's all done with a hardware assist. The equipment does all this; the problem is the management of it."

More than a year ago, when officers at VPNX.com's former incarnation, SwitchSoft Inc., were studying virtual network management, "VPN boxes

**PRESIDENT AND CEO TYRONE F. PIKE says VPNX offers
"policy-based control over a complex infrastructure"**

VPNX.com Inc.

Location: 805 Veterans Blvd., Suite 316, Redwood City, Calif. 94063

Telephone: (650) 569-4900

Web: *www.vpnx.com*

Niche: Secure VPNs offered on an as-needed basis to corporations

Why it's worth watching: The service rolls several notoriously prickly technologies, such as high-level wide-area network security and network management, into a one-stop service. The fact that it's outsourced with a menu of options and pricing schemes will make it attractive to companies that need flexible, irregular VPN service.

Number of employees: 75

Founded: As SwitchSoft Systems Inc., the company originally sold policy-based switch-management systems. It changed its business focus to the current out-sourced VPN business and renamed itself VPNX.-com in January 1999.

Company officers: Tyrone F. Pike, president and CEO; Joseph J. Ekstrom, chief technology officer; Kurt Johnson, chief financial officer

Burn money: Mayfield Fund, Telos Venture Partners and others

Red flags for IT:
• VPNX.com must constantly prove its claim that its service doesn't crimp network performance.
• Outsourcing tedious VPN setup and maintenance is a great idea, so it's sure to be ripped off by bigger vendors. If VPNX.com doesn't grab a big share of the market quickly, it could be squashed by the likes of AT&T Corp. and MCI WorldCom Inc.

were getting widespread," so the company decided to refo-cus on the secure-VPN service, says Ekstrom.

Howard says VPNX.com's expertise gives the company more than just a first-to-market advantage. To do what the company does, he says, "there's a lot of arcane, nasty problems that have to be solved. And you can't read manuals and solve these problems — you need to have been there, done that."

Proving What's Possible

VPNX.com's biggest hurdle in selling to large companies is that "they think it's impossible," Pike says. "We offer policy-based control over a complex infrastructure. We've been able to do it. Some others have not."

If you build a better mouse-trap, bigger companies may swipe it. But VPNX.com hopes that its specialized expertise will influence the Ciscos and AT&Ts of the world to consider joining the company instead of trying to beat it. "I think we'll find a way to partner with a big carrier," Pike says.

VPNX.com has seized on secure conferencing, but it's easy to envision other uses for the service. X-Collaboration Software Corp. in Boston rents out a document life cycle management application as an application service provider. By using VPNX.com's technology, it eliminates the need to embed Secure Sockets Layer-based encryption in its application.

With the server load thus lightened, X-Collaboration says, the company can support 30% more applications per server.

But, says Eric Josephson, director of technical services at X-Collaboration, VPNX.com's big draw is "greater-than-bul-let-proof security." He says Secure Sockets Layer security has been broken — but VPNX.-com's hasn't.

If VPNX.com can prove to IT that its service isn't a performance drag and can stave off larger competitors, its "idea is a fundamental service that we'll see everywhere five years from now," Howard says. ▶

Ulfelder is a freelance writer in Southboro, Mass.

VPNX 101

VPNX.com acknowledges that the VPN technologies it offers exist elsewhere. The company's value proposition lies in its integration of the technologies – and the fact that it offers them as a service.

The company's secret weapon is a proprietary service management application called VPNX that "takes away some of the detail work on configuring addresses, setting up firewall filters and so on," says John Watkins, VPNX.com's vice president of product management.

VPNX pulls in information from different tunnel types and maps it into specially created, highly secure Layer 2 and Layer 3 networks, Watkins says. "This preserves security but lets us mix-master different technologies," he adds. "We do all the protocols we need to."

Essentially, VPNX dynamically creates IP subnetworks for secure conversations. "The app is creating and destroying these networks using policy-based network management," Watkins says. Then, out goes the data again.

Limited Competition

Right now, VPNX has very little competition. Most products sold in the network security game – including the Secure VPN portfolio from Murray Hill, N.J.-based Lucent Technologies Inc., Franklin, Mass.-based Altiga Networks' Microsoft-friendly VPN concentrators, New York-based Toshiba America Inc.'s turnkey VPN offerings and Cisco Systems Inc.'s Access VPN program – either include or can be purchased with extensive professional services and training.

San Jose-based Concentric Network Corp., for example, offers Enterprise VPN and CustomLink VPN, which include cradle-to-grave setup and VPN hosting. And service providers such as Washington-based PSINet Inc., local exchange carriers and big communications carriers all offer some VPN services. A few operate on an on-demand basis.

But these products and services are cost-effective only if the VPN will be used on a regular, semipermanent basis, say analysts. The setup can be tedious, which translates into big bucks spent on an outsourced vendor or consultant. Moreover, if equipment must be installed on the customer's premises, there's usually an ongoing maintenance contract, which can become expensive.

Today, the goal of most VPN equipment makers is to eliminate the need to install equipment at the customer's site. The technology is slowly getting there, and when it does, expect to see many more providers offering services similar to those of VPNX.com. *– Steve Ulfelder*

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Payroll Busters

How much are techno-savvy folks with e-commerce and business skills earning these days? The sky's the limit. By Bronwyn Fryer

LAINIE GILBY-ANDERSON, a recruiter at Professional Consulting Network Inc. (PCN) in San Francisco, was shocked when a candidate for a project manager's position turned down a job offer at a management consulting company.

The offer included a base salary of $120,000, a 20% annual bonus, 2,000 shares of stock and a $10,000 sign-on bonus.

"He was only making $80,000 at his current job, but he insisted he wouldn't make a move for less than $150,000," says Gilby-Anderson. "Go figure."

These are high times for high rollers, recruiters say. At the time *Computerworld*'s Midyear 1999 Salary Survey was conducted, a CIO with more than four years' experience commanded a salary of $200,300 in San Francisco; on Wall Street, salaries can approach the half-million mark. These figures don't include perks such as stock options, which could result in additional millions.

What other payroll-busting jobs are out there? We asked veteran technical recruiters for their takes on information technology professionals who really break the bank. According to these experts, almost any technologist with e-commerce and project management skills can ask for — and get — huge salaries and benefits. These jobs include the following:

▪ Chief technology officer
Base salary range: $100,000 to $250,000-plus; varies by location
Bonus range: Up to 30% of salary
Equity range: Variable, but can be as high as 3% of the company's equity

If you're second-in-command to the CIO or chief technology officer and you have years of applications development experience, your next move should be into the chief technology officer's spot, says Phil Schneidermeyer, an executive recruiter at Korn/Ferry International in Los Angeles.

At early-stage companies, the chief technology officer is one of the first hires, and therefore can receive huge stock options that could make him a millionaire. To land this job, you'll need to be a passionate problem-solver with a demonstrated record of reducing cycle time. "You have to talk in terms of 'Damn the torpedoes, let's get this straight into production,'" Schneidermeyer says.

▪ E-commerce architect
Base salary range: $120,000 to $200,000-plus; varies by location
Bonus range: Up to 20% of salary
Equity range: Variable

If you know Java, Perl, C++ and Corba and have experience in systems architecture, you can practically name your price. Deep-pocketed companies are dying to have you work on their e-commerce sites.

"Architects who can design the Internet solution from concept through implementation are probably the hottest thing going," says Heinz Bartesch, a recruiter at PCN. "I've got a few B-to-B consulting firms that tell me, 'If you have the candidate and they're good, we'll pay what we have to.'"

▪ Technical team leader/ project leader
Base salary range: $100,000 to $200,000-plus; varies by location
Bonus range: Up to 20% of salary
Equity range: Variable

Senior technical team leaders with good communication, project management and leadership skills, as well as knowledge of Web languages and databases, are now worth their weight in gold.

"A dot-com division of a major Wall Street firm offered $150,000 with a $100,000 bonus, equity and relocation compensation to a candidate in Chicago who had been making $110,000," says Steve Markham, a recruiter at Pencom Systems Inc. in New York. "In the New York marketplace, the numbers are pretty crazy."

▪ Practice manager
Base salary range: $80,000 to $200,000-plus; varies by location
Bonus range: Up to 20% of salary
Equity range: Variable

If you've got a background in IT assessment and a pedigree in business development (MBA preferred), you can land a job as a point person for big projects. You'll need skills in IT operations and software assessment, as well as in marketing, staffing, budgeting and building customer relationships. A big plus: the ability to sleep well on planes.

▪ Technical sales
Base salary range: $100,000 or more, plus commissions on sales
Bonus range: Up to 20% of salary
Equity range: Variable

If you have a background selling technology systems and can hook up with a company that has a hot technology product, you can do extremely well.

"One of my friends — he's 29, with about eight years' experience, from Australia — is considering a technical lead presales position for a package of $250,000 to $300,000, plus commission, plus stock," says PCN's Gilby-Anderson. "He says, 'If I'm going to be here in the U.S., away from home, I want to make as much money as I can to take back and live happily ever after!'" ▪

Fryer is a freelance writer in Santa Cruz, Calif.

DAVID HOLLENBACH

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Plenty of New Linux Stocks, but No Red Hat

LinuxCare expected to be a strong performer

BY DOMINIQUE DECKMYN

INVESTORS WHO missed out on last year's Linux success stories will get a new chance this month, as several Linux companies prepare to go public. The consensus from the analysts: LinuxCare Inc. [Nasdaq:LXCR proposed] looks promising, but be careful with Caldera Systems Inc. [Nasdaq:CALD proposed] and stay away from LinuxOne Inc. [Nasdaq:LINX proposed].

INDUSTRY ALMANAC

LinuxCare in San Francisco and Caldera Systems in Orem, Utah, both priced their initial public offerings last week. Both are highly regarded Linux companies, but they have little revenue and mounting losses.

Caldera Systems is selling 5 million shares at $7 to $9 per share — a price that's likely to be raised before the company goes public. Caldera was spun off from Lindon, Utah-based Caldera Inc. in 1998. Last year, it had sales of $3 million and losses of $9.4 million. That's a much smaller sales figure than that which its largest competitor, Red Hat Inc. [Nasdaq:RHAT], had when it went public last year, says Bill Claybrook, an industry analyst at Aberdeen Group Inc. in Boston.

Claybrook says Caldera also trails Durham, N.C.-based Red Hat in brand-name recognition, and is being eclipsed by TurboLinux Inc. as the No. 2 Linux distributor. Brisbane, Calif.-based TurboLinux is the leading Linux distributor in the Asia-Pacific region and has

been developing clustering technology on top of Linux. Claybrook says the Linux market is headed for consolidation.

On the plus side, Caldera has come up with an effective Linux business model based on software distribution through a retail channel, says Jeff Hirschkorn, a senior market analyst at IPO.com Inc. in New York.

But that's not enough to sway Irv De-Graw, research director at WorldFinanceNet.com in Sarasota, Fla., who says Linux software and hardware stocks have little future. He says he sees much more upside professional services.

DeGraw says he's much more optimistic about LinuxCare, the company that was tapped by Dell Computer Corp. [Nasdaq:DELL], Hewlett-Packard Co. [NYSE:HWP], IBM [NYSE:IBM], Sun Microsystems Inc. [Nasdaq:SUNW] and others to provide Linux professional services to their respective customers. LinuxCare lost $5.1 million on revenue of $156,000 for the quarter ended Sept. 30.

But there's one caveat: For the period ended Sept. 30, three major customers represented a combined 74% of LinuxCare's revenue.

"What happens if they lose one of their top partnerships?" asked Hirschkorn.

Analysts say they have little patience with LinuxOne, a virtually unknown start-up in Mountain View, Calif., that recently launched a Linux distribution that's seen as a transparent attempt to cash in on the Linux hype.

"Stay away from the deal," warns Hirschkorn.

Says DeGraw: "It's an embarrassment that could hurt the whole industry." ▶

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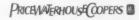**www.computerworld.com**

EBay, Wells Fargo Join In Web Payments Deal

'Person-to-person' transactions debut

BY DEWAYNE LEHMAN

EBAY INC. and Wells Fargo & Co. in San Jose launched a joint venture to process person-to-person credit-card payments over the Web auction site.

The company, Billpoint Inc., will speed up the sometimes lengthy transaction process between people who buy and sell at eBay's auction site. But company officials say they also plan to take the new payment platform into other e-commerce areas.

Billpoint allows eBay buyers to enter their credit-card information to make purchases. When a transaction occurs, Billpoint deducts the payment from the buyer's card and electronically credits the seller's bank account, without letting either person see the account information of the other.

EBay officials say they hope the new platform will be more popular than the current payment method used by its 10 million registered users. Now, after an auction is completed, the seller contacts the buyer and tells him where to send a check, then waits for payment before delivering the item.

According to eBay president and CEO Meg Whitman, users of Billpoint don't need new hardware or software.

"The early results from our tests have been strong," Whitman said at the launch last week. "We expect buyers and sellers to move to Billpoint."

EBay and Wells Fargo officials say the teaming of the nation's seventh-largest bank and the Internet auction giant will provide users of Billpoint with added security.

"We believe that we are the first to address the person-to-person payment space," said Michelle Bonaugh, senior vice president of e-commerce at Wells Fargo, which purchased a 35% stake in Billpoint from eBay for an undisclosed sum.

Industry observers called Billpoint's approach unique.

"This offers a whole new class of payments online," said Tom Murphy, vice president at Global Concepts Inc., a Norcross, Ga.-based payment systems consulting firm.

Billpoint, bought by eBay in May, will offer its services for free until May 31. After that, transaction fees of 35 cents per sale and 3.5% of the total will be charged to the seller. For transactions under $10, a flat 35-cent fee will apply. ▶

Automakers

One, Oracle and a third provider could work together on something like that," said Erica Rugullies, an analyst at Giga Information Group Inc. in Cambridge, Mass.

Also, there are "three huge automotive companies with multiple back-office systems and thousands and thousands of trading partners, all of which have their data in different formats, and they'll all have different levels of Internet sophistication," Rugullies said.

Pierre Mitchell, an analyst at AMR Research Inc. in Boston, said the next step will be getting suppliers to migrate from electronic data interchange (EDI) over value-added networks, which is tightly coupled to production and accounting systems, to XML-based transactions over the Internet. "They're not going to rip out their mission-critical EDI just to reduce the transaction charge a little bit," Mitchell said, because the security and implementation risks may not outweigh the savings.

Chad Childers, a Web administrator at Ford, said the three automakers must agree on standards and enforce them in the supply chain. "Negotiating these political issues is a big thing," said Childers. "For example, open standards may not work with all suppliers."

Gartner Group Inc. in Stamford, Conn., predicted that the unnamed marketplace primarily will handle only auctions and the procurement of indirect materials prior to 2002.

"Processing the transactions from soup to nuts [will] be a challenge," said Gartner analyst Bruce Bond, noting that connecting each automakers' systems to the marketplace and changing business processes will be difficult. "Our gut feeling is that they haven't fully thought through how they are going to do that."

The parties were meeting last week to begin working on the details, said GM spokesman David Barnes. They'll be "starting small and growing to" back-end integration, he said. "I don't think anybody's tackled anything of this scale."

Even making sure catalogs refer to the same products with identical names can be a massive undertaking, said Fulton Wilcox, director of technology business at BOC Gases in Murray Hill, N.J., which has experience with online business-to-business transactions. "They're trying to set up the catalog to end all catalogs," he said.

Business issues loom as well, from maintaining contracts and aggregating catalogs from thousands of suppliers to overcoming the "legacy of distrust" that exists among automakers and some suppliers, said Giga analyst Andrew Bartels. Suppliers accustomed to "hardball negotiating tactics" will now wonder, "Have these guys really changed their attitude, or is this really just wolves in sheep's clothing?" Bartels said. ▶

UCITA

be delayed until July 2001, after a study committee, made up in part of user companies and vendors, reviews the law.

Rudin said UCITA gives vendors powerful leverage in contract negotiations. For instance, a "self-help" provision in UCITA would allow licensors to threaten disruption of a licensee's systems through automatic restraints, such as a "time bomb" that could shut down a program, he said. A user company can go to court to seek an injunction, but the prospects of a costly legal fight may prompt a user to "succumb to the demands of the licensor. So there's a real power shift that occurs," he said.

Rudin likened it to being held hostage.

Rudin said he hopes Virginia's study committee will "make sure [UCITA] is a broad-based law that is fair to both parties" and bring a series of amendments to Virginia's Legislature.

The National Conference of Commissioners on Uniform State Laws adopted UCITA in July. The conference recommends commercial code law and sends it to the 50 states for their adoption. Only a handful of states have introduced the measure.

Large businesses, theoretically, should be able to negotiate contracts with vendors that protect and exclude provisions they don't want, say UCITA supporters. In these contracts, UCITA would apply only as a default rule in areas not covered by the contract.

"Parties in particular situations are always free to modify the contract," said Mark Uncapher, a vice president at the Information Technology Association of America. "This is just a fail-safe or fallback set of provisions."

But Randy Roth, director of corporate purchasing at Principal Financial Group in Des Moines, Iowa, said his ability to negotiate with large vendors is already limited.

"Microsoft basically owns our desktops. We have no clout with Microsoft," said Roth. With other vendors, once their software becomes part of a mission-critical system, the vendor knows it. "I don't have a choice of saying, 'No, I don't want your product anymore.' I'm in tight with them. I have to have it," said Roth.

Roth said he is skeptical that Virginia's study committee can fix UCITA. "Anybody that really sits down and reads it understands how convoluted, how filled with holes, how hard to understand and how nasty it is to a standard business," he said.

UCITA supporters argue that the measure gives predictability and uniformity to software licenses. And they are also telling early adopting states that UCITA may be a potential high-tech economy builder.

Uncapher said vendors would have to establish a physical presence in states that adopt UCITA to be able to apply it to their contracts. "That's an advantage [for a state] in a very competitive marketplace," he said.

But Cem Kaner, a Santa Clara, Calif.-based computer law attorney and leading opponent of UCITA, said UCITA was written such that a vendor based in one state could say the laws of UCITA apply in a second state in which the product is sold.
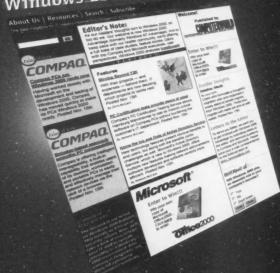
It's unclear how skeptical judges in other states will treat a contract provision that stipulates that the laws of a certain state applies to their states. "The answer to that has been subject to tremendous amounts of wishful thinking and propaganda," Kaner said. ▶

THE BACK PAGE

FRANK HAYES/FRANKLY SPEAKING

Why risk it?

JAPAN'S DEFENSE AGENCY pulled the plug last week on a new network linking army bases, after discovering that the software was written by members of a doomsday cult. Scary, huh? It gets scarier: Five contract software companies run by members of the Aum Shinri Kyo ("supreme truth") cult also wrote code for government agencies overseeing education, construction, the post office and the telephone system — as well as for hundreds of corporate customers.

Maybe that Aum name sounds familiar. In 1995, Aum members released nerve gas in a Tokyo subway, killing 12 people and injuring thousands more. Japanese authorities are afraid Aum programmers installed back doors or sabotage triggers in the contract software. The cult itself now says it has cleaned up its act and renounced law-breaking. But why take that chance?

Japan isn't alone in worrying about contractors. In the U.S., the Federal Aviation Administration is running after-the-fact background checks on dozens of Chinese, Pakistani, Ukrainian, British and Ethiopian programmers who worked on the FAA's Y2k fixes. None of the foreign programmers have been accused of doing anything wrong — but, the agency figures, why take a chance?

And after the latest round of Web site attacks, some security gurus are saying that no one should hire reformed hackers for *any* IT work. We shouldn't take the chance, they say, when we know these kids have histories of break-ins, back doors and bad behavior.

Are things really that bad? Yes. The more we outsource, the less we know about the people who'll get elbow-deep into our systems. They could be terrorists, industrial spies or crackers who plan to shut us down, steal our secrets or use our computers to launch attacks. We just don't know.

Is there an answer? Yeah, but no one's going to like it much. We're outsourcing that work to save time and money. And the only way to protect ourselves is to spend — what else? — time and money.

We'll have to spend time checking code we get from contractors. And grilling ASPs on their security standards and procedures. And drilling down to make sure subcontractors get the same hard stares as the big names who got the original contracts.

We may have to spend money on serious background checks for some contract workers — remember, real bad guys will lie on résumés and arrange for fake references.

We'll probably have to pay for insurance to make sure any losses due to dirty dealing are covered. Not prime-contractor performance bonds, but real insurance — if something goes horribly wrong, we want to make sure somebody with deep pockets will pay to make it right.

Yes, we should have been doing this all along. Some IT shops have been. But most of us slid into outsourcing a little at a time: A quick fix when a project went awry. Some extra help launching a Web store. Picking up an ongoing deal when we took over work the marketing or human resources department started.

Now we're outsourcing all kinds of things — systems development, applications, network management, maybe even the help desk. And we haven't got the oversight procedures in place to make sure the people who do our work for us are who we think and are doing what we want — and *not* walking away with any proprietary knowledge.

And now the brass will scream when we ask for a bigger budget to look over those outsourcers' shoulders. When they do, we can point out that farming out IT work is still cheaper than doing it all ourselves. We can suggest that they just think of it as doing due diligence. And we can remind them that the bad guys aren't a theory — as we know from places like Japan, they're very, very real.

Why take the chance? ❿

> *The more we outsource, the less we know about the people who'll get elbow-deep into our systems.*

SHARK TANK

ROAD RULES A big engineering firm is developing a vehicle detection system for futuristic highways – very Buck Rogers. Developers work night and day tuning communications between the on-the-street test site and the lab – very plain-vanilla IT. Beta goes in Friday. Works all weekend. Monday it stops communicating. Panic ensues. Bigwigs scream that the beta's a failure. Corporate presidents fume. All eyes turn to the developer, who finally figures out what's wrong. "Turns out the system was working fine," a pilot fish reports, "right up to the point when a car wiped out the communications cabinet on the side of the road."

SEZ WHO? Boss tells a pilot fish that a new IT auditor has asked for information about the company's system security. Pilot fish is supposed to fill in the blanks for the auditor, she says. Whoa, says pilot fish. Do we know who this guy is? Why should we tell him anything? Good point, says boss. She checks out the auditor, who turns out OK. Congrats, says auditor. Seems no one else in the entire company had questioned the legitimacy of his request. "And naturally, my boss didn't tell him that it was me who suggested it," pilot fish says. Don't worry about what the auditor knows, kid. Just make sure your boss remembers who made her look good at bonus time.

Y2K-PLUS-NINE-WEEKS and counting: Pilot fish reports that on Feb. 24, the Oracle Technology Network for developers reported the year as 3900. Seems to be fixed now, though.
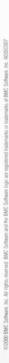
UNWIRED pilot fish at the Wireless 2000 show in New Orleans snickers that vendors couldn't demo their products. So many attendees were using phones, pagers and handhelds that nobody could make a new connection. Hey, don't laugh until you're sure it won't happen in your own sales department.
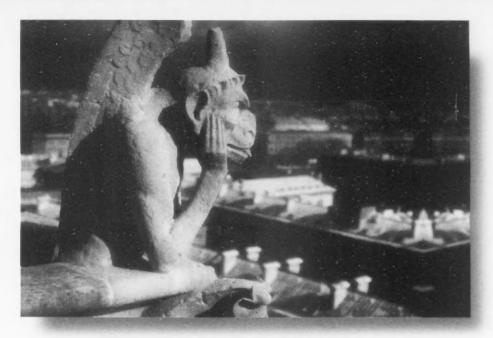
TOO KIND A giant consulting outfit is trying to convince an automotive supplier to hire 'em to install GMnet, GM's supplier extranet. "The consultant was trying to imply they were GMnet experts," says the pilot fish. Sounds OK up until the pitchman says, "You know about GMnet, right? It also goes by another name – telnet." "Our jaws dropped and half of us had to leave the room so we didn't laugh in his face," says the pilot fish.

These days, Sharky doesn't even bother to head for the hallway. Clueless consultants? Bungling bosses? Useless users? Make me laugh: **sharky@computerworld.com**. If it gets printed, you get a sharp Shark shirt. And don't forget the daily deep dive at *computerworld.com/sharky*.

The 5th Wave

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Vigilant

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